

Journal

of the

Royal Naval Medical Service.



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EDITED BY

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AND

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Editorial.

Naval Medical Officers can have little reason to complain of lack of interest or monotony in the year that has passed away. The steady expansion of the Fleet in all types of ships and vessels, many of them embodying original design, the constant training of thousands of new entries at R.N. Barracks and Training Establishments, and the mobilization of the Fleet in the latter part of the year, all these have affected the personnel of the Medical Branch in several and diverse directions.

New problems of construction and ventilation have called for solution. The mobilization of the Reserves, which passed off so smoothly, kept the Medical Staffs at R.N. Barracks very fully occupied, and R.N. Hospitals, always sensitive to increase of personnel, especially of junior personnel at the Training Establishments, have had a record turn over of patients. Finally, the new Air Arm has come into being, and is beginning to emerge from embryonic life, so that in due course the Naval Medical Department will have to undertake the examinations of flying personnel, at present carried out by the Central Medical Board of the Royal Air Force. Officers are already being trained with this object in view, as well as for the education of other officers, who will constantly be in contact with the Air Arm in ships, and who may eventually have medical charge of Air Establishments ashore.

Two very satisfactory features stand out in the midst of these ever expanding activities, with their demands on medical personnel. It has been found possible to return a sufficiency of Surgeon Lieutenant-Commanders at the Promotion Course at R.N. College Greenwich, and two important researches have been undertaken. Tuberculosis in the Navy, which the Director General calls "Public Enemy No. 1," has a Prophit Scholar of the Medical Research Council working upon it with special reference to radiological diagnosis of the chests of new entries, and Rheumatism—"Public Enemy No. 2"—is being taken in hand by the Empire Rheumatism Council. Both the representatives of these Research bodies are working

[illegible] "Batch [illegible]

[illegible] and [illegible] are now in being and [illegible] already received by this Journal from those [illegible] of the variety of the Medical Officers proventivo [illegible] in these outposts of Empire

[illegible] resulted in many pleasurable and co operative [illegible] in the Emergency List and in the Royal Naval [illegible] officers at present on the Active List

[illegible] notable and deeply regretted depletions in [illegible] Hill's death, which took place in April was a very [illegible] contemporanes, and in the death of Sir David Wilkie [illegible] Service has lost an illustrious and highly respected [illegible] on Rear Admiral Pickering Pick's retirement is [illegible] fact but in his case it seems that the severance [illegible] presented to represent the Services in the British Medical [illegible] trust to which he is already devoting himself with his customary [illegible] and enthusiasm

Coming [illegible] itself we have to record a vacancy in the joint editorship [illegible] Captain Syms's recent promotion Surgeon Captain H [illegible] successor

A gratifying [illegible] has been the quality and interest of the contributions [illegible] in the shape of articles and of clinical notes and cases and [illegible] it is noted with satisfaction that the Journal has the continued support of junior officers in the far off corners of the Globe, and of [illegible] in the R N V R with their varied sources of experience ashore and in [illegible] spheres To all these contributors we express our thanks

We would further express our gratitude to contemporary journals both British and foreign for sending us their interesting publications and to Editors of other periodicals who have permitted us to extract and abstract matter of special value to the Service In this respect we would particularly mention the Editor of the *Journal of the Royal Society of Arts*, to whose courtesy as well as to the author's kindness, we owe the publication in our pages of Sir Aldo Castellani's brilliant lecture "On the Organization of the Italian Expeditionary Forces during the Ethiopian War of 1935 36

The finances of the Journal continue on a satisfactory basis as is shown in the published Balance Sheet We feel privileged in having been able to report on the charitable activities of the Naval Medical Compassionate Fund and on the advantages of King Edward VII's Convalescent Home at Osborne in respect of Naval Officers

In conclusion, we look forward to the continued support of our present contributors and to a broadening of the basis of the sources of supply

Articles.

ON HEAD INJURIES AND THEIR MENTAL SEQUELÆ.

By Surgeon Captain J. T. Dawson, M.D., F.R.C.S.

For the past two decades it has become customary [illegible] which involve the head to pay less attention to fracture [illegible] more to damage of the intracranial contents. Except in [illegible] fracture causing obvious irritation or depression and in that [illegible] the form of compression due to middle meningeal hæmorrhage the surgeon tends to hold his hand and to attempt an assessment of the cerebral damage. It is the latter theme which the writer proposes to examine, being impelled thereunto by the two series of head injuries recorded in the present number of the Journal.

Trotter [1] has observed that Kinetic energy (on which the seriousness of accidents obviously depends) varies with the mass and the *square* of the velocity of the moving bodies concerned. Thus if an accident occurs in horse traffic which is moving at 10 miles an hour, and a motor accident occurs when the stream of traffic is moving at an average of 30 miles an hour, the kinetic energy involved in the latter case, and the consequent violence of the injury is not three but nine times that of the former.

In all head injuries of any severity there is an initial stage called concussion. This may be a momentary affair or somewhat longer. Trotter defines it as follows: 'An essentially transient state due to head injury which is of instantaneous onset, manifests widespread symptoms of a paralytic kind, does not as such comprise any evidence of structural cerebral injury, and is always followed by amnesia for the actual moment of the accident.' No one has challenged Trotter's postulates for concussion, though some have challenged his views as to its causation. He considered that it was due to cerebral anæmia the result of a sudden deformation of the skull at the moment of accident. Russell [3] believes that there is a further element, namely a mechanical or molecular disturbance in the tissues of the brain which inhibits the flow of impulses. By way of analogy he compares this to the result of a sudden blow on a peripheral nerve.

The disturbance of function in concussion varies in severity and duration. It may be that the patient is only momentarily stunned and that this is followed by mental confusion and dizziness, and possibly headache, the pulse and respirations remaining normal. He may continue his task or game after the accident in an automatic sort of way, poorly adapted to its changing circumstances. As Riddoch puts it: 'Behaviour of this sort has always the stamp of imperfect conscious guidance.' [4] Such a state of affairs may follow a glancing blow, and the cerebral hæmi-

[illegible] momentarily [illegible] but concussion [illegible] in such degree that it and involve the stem of the brain including the centres in the medulla If such be the case there the patient lies limp, if he has an open wound it does not bleed The pupils are dilated and possibly fixed, the pulse in the more serious cases is rapid and feeble, and the breathing is laboured and shallow with periodic sighing The reflexes are as good as gone Such a picture reveals severe bulbar shock, and if death should result from bulbar anæmia respiration fails first Such are the two extremes of concussion In all but the very severe cases recovery commences within a few minutes It is clear that the brain has been damaged, if extra cerebral haemorrhage has occurred, if the recovery of consciousness is delayed if the stage of confusion is prolonged more than a day or so, if stupor or coma recur after consciousness has been regained if local paralysis is present, or if blood is found in the cerebrospinal fluid [4]

It is doubtful if any but the mildest cases escape some degree of organic damage to the substance of the brain Nor is the degree of concussion necessarily a full index of the severity of the lesion Indeed it is not certain that the degree of retrograde amnesia is proportionate to the violence of the injury sustained One thing is certain, however that the victim of concussion will not recall the moment of impact

What then are the possibilities and probabilities as regards the underlying organic lesions? By far the commonest are cerebral contusion and cerebral laceration The latter differs in degree from the former because of the greater amount of hæmorrhage in laceration Both cause focal necrosis but in the state of contusion the hæmorrhages are punctate, quite local in the milder cases but widespread in the deeply unconscious with dilated pupils and feeble pulse

A usual thing at autopsy is to find the contusions localised at the poles of the brain sometimes the under surface of a frontal pole is severely contused it may be a temporal or occipital pole or there may be punctate hæmorrhages in the neighbourhood of a laceration The area about the hypothalamus, with its sensitive vegetative centres may be the site of these hæmorrhages with resulting bradycardia, hyperthermia, and certain metabolic disturbances whose precise effect upon the tissues of the brain is still obscure Again, these punctate hæmorrhages may be found in the mid-brain or in the brain stem Marland and Behing [9], have stressed their frequent occurrence in the perivascular spaces about the vessels of the basal ganglionic system and their rarity in the cortex Following Cassara [10] they explain this as a *contre coup* phenomenon Due to the sudden pressure on the interpeduncular basal cistern during the impact of the blow This sudden increase of pressure has the effect of forcing the cerebrospinal fluid back into the Virchow Robin perivascular spaces tearing the fibrillæ within them This laceration causes the rupture of the small vessels in the spaces with consequent ring hæmorrhages In this way they explain the Parkinsonian syndromes and

symptoms [illegible] lenticular degeneration which are sometimes [illegible] as simple hysteria.

Another [illegible] post-mortem necropsy is a widespread pericellular edema or a reaction phenomenon. One may assume that there is interruption of centres and association tracts and Russell [3] has described a degenerative condition within the substance of the brain, namely a fibrous glial reaction and a reaction in the protoplasmic astrocytes.

The contents of the skull are different in weight and in consistency. They differ therefore in their momentum. The brain substance has a certain consistency, the blood circulating in the brain has another, and the cerebrospinal fluid in the subarachnoid space and ventricles has yet a third. These fluids have a potential power of yielding when the skull is suddenly distorted by the impact of a blow. The blood can be squeezed momentarily out of the cerebral circulation, and the cerebrospinal fluid can recede in part into the spinal subarachnoid space. Moreover, the solid substance of the brain can be thrust through the foramen magnum in the shape of a pressure cone. Nor does one underrate the influence exerted by the falx cerebri and the tentorium in the presence of suddenly increased pressure and momentum. One envisages, too, the bruising and laceration and scarring in the *contre coup* lesion. Much work has been done on the interrelationship that results between the two cerebral circulations, the blood and the cerebrospinal systems in head injuries. To this course as well as to the stretching of the falx and serous membranes are attributed the headaches and other distressing symptoms to be presently described.

Contre coup has been the subject of much serious consideration. If a man falls on the pavement and hits his head, the brain may tear itself from its coverings by its own momentum. In this way meningeal vessels are torn and bleed. But if a blunt instrument is applied to a man's head when it is stationary it is probable that the resulting momentum of the brain substance causes it to impinge with great force at the point on the skull opposite to the point of application of the blow. This causes haemorrhage and laceration often severe, at the latter point and results finally in dense scarring of the brain tissue in the damaged area [12].

To these pathological entities Jefferson [7] has added what he aptly calls the 'epiphenomena', that is to say extradural, subdural and subarachnoid haemorrhages due to laceration together with the possibility of circumscribed collections of arachnoid fluid, a reactionary increase in the cerebrospinal fluid, and occasionally an internal hydrocephalus due to an obstructive arachnoid adhesion. Finally, he lays great stress on the presence and clinical recognition of delayed subdural hematomata.

The cerebral contusion is in its essence a traumatic encephalitis. If

[illegible] on the Nuclear [illegible] of the *Proceedings of the Royal Society of Medicine*, 1938) has called attention to the complete destruction [illegible] of myelin sheath [illegible] those parts of the brain that have been contused.

... red within 24 hours one speaks of it clinically as ... ontusion If however, the patient remains un- ... longer than that one speaks of it as a major ... te an acute traumatic psychosis In a ... and stupor in varying degree Whereas ... the classical features of concussion so stupor ... the hall-marks of a major cerebral contusion ... stupor becomes the dominating symptom on ... much of it is actually due to direct contusion, ... my oedema Patients arrive in hospital in ... may be deeply unconscious with widely dilated ... respiration and absent reflexes Such cases ... speedy Another group arrives in a state of re- ... they can generally be roused sufficiently dazed ... examination Some of them relapse into ... point is the depth of this unconsciousness ... Light stupor and no physical signs ... stupor and physical signs invite exploration

... uncooperative for hours it may be days ... In them the stupor ... in depth, and their general condition is not ... necessarily bad ... about in bed in a restless way and cannot ... be regarded as ... gradually they recover In such cases one should always look for ... and focal signs [7]

Doubtless there is ... measure of reactionary œdema, but there ... must be for all the examination knows some focal hæmorrhage and this may ... accumulating at a varying speed It is clear that if the patient remains unconscious for more than twenty four hours he is suffering from a major ... contusion and possibly other lesions as well During the stage of reaction ... see delirium at night and in the daytime irritability, resentment, disorientation of time and place and sometimes even violence The patient ... curled up with his eyes away from the light this stage of reaction ... during its height during the first two or three days after the injury If he complains of anything it is a throbbing headache or photophobia This ... stupor with its full and bounding pulse makes one wonder how far ... so called cerebral irritation is due to pressure of some sort, either from hæmorrhage or œdema and how far to inhibition of neural function Nowadays we call the condition traumatic delirium, which is a far better name than 'cerebral irritation' and this condition will be prolonged if multiple contusions are present Of course the coma or stupor, as the case may be would be prolonged and modified in character if there were a hæmorrhage in some part of the body other than the head for instance from a coincident ruptured spleen

The stages of recovery are subject to fluctuation and relapse They always follow the same order, no matter whether recovery of consciousness is a speedy process, or whether it is like a slow-motion cinema picture

[illegible] by the [illegible] less than forty eight [illegible] in advance up to ninety days

Broadly speaking Symonds [5] perceives these stages under three headings (1) Stupor, (2) excitement, (3) confusion From flaccid coma the patient reaches a stage of deep stupor with no response to external stimuli except of the grossest character alimentary and excretory This deep stage of unconsciousness seldom lasts more than forty eight hours, if as long The next stage is that of excitement The patient is dazed and bewildered, irritable resistive and resentful of interference this stage may last for days or weeks, and is liable to set backs for two or three days at a time In the confusional stage that follows the patient's behaviour is quieter and more decorous, and his speech more coherent Indeed for a brief period he may speak quite rationally and deceive the observer It will be noted however, that he is still disorientated that his memory is still grossly impaired that his judgment is still very faulty and that he still has disturbances of speech On the affective side he is unduly elated garrulous inordinately familiar with the doctor and the attendants He is quite unable to handle and co ordinate the data which govern a situation no matter how simple, he has in fact lost the power of "synthesising," as Symonds puts it and lastly he perseverates in action and in word Whilst in this state of childish elation he is noticed to be indulging in pseudo memories and to be confabulating, just as one sees in the Korsakoff syndrome During this confusional phase the patient may reveal certain psychotic manifestations a paranoid state for example, a schizoid tendency, a manic depressive tendency, or a change in personality Finally comes recovery of memory and insight The patient may sit up suddenly and say Where am I ? Whatever has happened ? To the observer it becomes obvious at this point not only that insight has returned but that this is the time to test the degree of amnesia for the moment of injury and the length of the retrograde amnesia If one goes into the matter of amnesia during the confusional stage one finds that the blank interval appears longer than is actually the case A recollection of facts which shortly preceded the accident is a sound indication that the patient has regained full consciousness [4]

In assessing progress towards the return of consciousness it is wise to take note of the development of speech At first there may be nothing but a groan or a shout constantly repeated Then comes a gradual increase in the vocabulary mainly a repetition of words, and this is followed by a meaningless string of jargon The patient pays little attention to questions By the time he has reached the confusional stage he is still disorientated and garrulous That his higher centres are inhibited is made manifest by his inconsequent flippancy towards the medical attendant His sense of social decencies has not fully returned Finally, with the return of orienta

... rinal sen... ...l-...unces clear ... ...s beginning ... ... to pul... ... ...rly deal with ... propositions ... ... broader and ... ... insight ... itself based ... ... memory spe... ... ... the ... process pe... ... ... disappears

The temperature during the first twenty four hours may rise from the ... normal state of the original concussion and shock to 101° or 102° F ... severe cases pyrexia may last for more than forty eight hours, the ... still being unconscious Blood in the subarachnoid space is an ... and it may be that hyperpyrexia is the cause of the temperature The pulse rate is an important pointer In fatal cases the pulse is feeble and thready at the start and its rate increases progressively until death takes place On the other hand if there is a healthy stage of reaction, the pulse which was fast and feeble during concussion becomes slow and hard This is a welcome sign except for the reservation that compression will also cause a slow pulse The respirations at first rapid and shallow, deepen as recovery of consciousness advances These three the temperature, the pulse and respirations, should all be normal in a few days

There is no constant relationship between the degree of stupor and the pressure of the cerebrospinal fluid The normal pressure is about 200 mm of water Ritchie Russell found in his long series of cases that the pressure did not rise above this normal figure in three of the most deeply comatose cases In seven stuporose cases it was below 200 mm , and in twelve where consciousness had already returned, it was above 200 mm In this class of case 330 mm is about as high as the pressure does rise Where subarachnoid hæmorrhages have occurred the blood in the cerebrospinal fluid is removed very rapidly by phagocytosis In seventy two hours only a few corpuscles are seen A fall in the protein content takes place *pari passu* with the blood clearance. There is a moderate leucocytosis, unless infection is imminent when of course the white count will rise in ominous fashion

Just as we are able on occasion for instance in a subdural hæmatoma, to observe the descent from the rational state in series down to dementia so in these cases we are privileged to observe the converse process from coma or stupor upwards in a series of stages to normal reason with insight and judgment and control

Throughout this progressive ascent, however, there may be setbacks Indeed the patient may sometimes relapse into coma, a serious affair These setbacks reveal themselves by certain danger signals wisps of the wind it is true in many cases but enough in some to help us to decide whether the damage is due to cerebral contusion alone or to something more than cerebral contusion It is always difficult to get lawyers and laymen to believe that the substance of the brain can be damaged without injury to the skull, and indeed that damage to the skull may absorb the main force of the blow so that the brain itself escapes It is equally

[illegible] [illegible] that there [illegible] cerebral damage [illegible] [illegible] [illegible] [illegible] [illegible] because of the stupor [illegible] [illegible] patient. For instance, defects of smell and hearing, which are [illegible] valuable evidence, may not be tested for because the semi-[illegible] patient does not complain of them. Pupillary signs are the [illegible] [illegible] [illegible] and reflex impairments (these suggesting contusion of [illegible] brain) and grosser things like diplopia, squint, defect of [illegible] [illegible] [illegible] and visual deficiences. These disappear as a rule fairly rapidly. Then there may be epileptiform convulsions Jacksonian in type. Parkinsonian features occasionally present themselves. Incontinence of urine may continue even after consciousness has been recovered. The Hutchinsonian pupil, if present, is a matter of the first importance, and one may be able to detect a contralateral palsy even though the patient is in a state of stupor. It is a tremendous mistake to neglect physical examination of the nervous system simply because the patient is unable to co-operate. Examination of the reflexes is in no way interfered with because the patient is unconscious, and the flail-like flop of a paralysed limb which has been raised by the doctor can be discerned without the patient's assistance.

At necropsy on early fatalities cerebral oedema is the rule. This is the foundation of a conception held by so many that compression is the cause of the stupor. The alternative is gross haemorrhage. But as a matter of fact the phenomenon of compression is often absent, and Jefferson's [8] observations on the point are worth noting. He points out that the pressure of the cerebrospinal fluid is often low, certainly not notably increased; that the effects of hypertonic saline are far from being uniformly good in producing a return to consciousness; that operation under local anaesthesia not infrequently reveals a low-pressure brain, and not the bulging hemisphere that one expects to see in a case of high intracranial pressure. He compares this state with that of cerebral tumours with oedema. The pressure in subtentorial tumours is far higher than is customary in cerebral contusions. He remarks that in these hypertonic saline causes stupor to vanish in most effective fashion. Why not then in cases of cerebral contusion? He concludes that the condition is not entirely due to cerebral oedema but that the higher neuronal mechanisms are interrupted.

When the patient has recovered from the acute traumatic psychosis, that is to say from the confusional stages, we may profitably begin to analyse the residual symptoms of contusion and to tease them out from any accompanying lesion. Trotter [1] taught us what these symptoms are: headache, giddiness, irritability, nervousness, defective memory and power of concentration, fatigability, lack of initiative and insomnia. To Trotter we owe the recognition of this combination of symptoms as an organic syndrome with an organic significance. Neurologists speak of the

[illegible] It is not [illegible] the [illegible] symptoms in head injuries [illegible] fracture to [illegible] by [illegible] observers as hysteria or a compensation neurosis [illegible] other kind of psychogenic disorder Not that such neuroses may [illegible] superimposed in time on this syndrome of cerebral contusion [illegible] they often are as will presently be seen The important thing [illegible] to realize is this that in almost every case of cerebral contusion [illegible] how minor it may be there is some organic residue If this [illegible] fully grasped all the distressing sequels which are wont to follow [illegible] anticipated and their proper measure taken should they occur

The headache has its own very definite characteristics It is a real pain, not the mere discomfort that the neurotic experiences but a shooting piercing splitting or throbbing headache and it is induced or made worse by any change of posture such as bending down and by coughing or sneezing It is often complained of when the patient sits or lies in a definite position, it is bad when he retires to bed, when he wakes up, when he indulges in physical exertion in bright lights and in a thundery atmosphere

The giddiness is a floating sense of unsteadiness rather than a true vertigo with a feeling of rotation It comes on when the patient stoops or gets out of bed suddenly, and, transient though it is it constitutes a source of perpetual inconvenience and discomfort to its owner

Permanent mental downfall of the type that requires the care of others is unusual unless the case is complicated by a massive hæmorrhage or a subdural hæmatoma but minor degrees of mental disablement are quite common and may last for years

It is manifest from what has been said above that from the clinical point of view one must regard the first twenty four hours after injury as a separate entity Concussion is a transient state While it lasts it masks what lies beneath it If during recovery from the concussion state the patient relapses into stupor or deep coma then an arterial hæmorrhage which is proceeding may be diagnosed with some degree of certainty If after twenty four hours the patient seems normal a major contusion may be excluded and a minor one surmised but if stupor continues beyond that time then a major contusion exists and possibly some gross lesion as well This latter will be recognized by a dilated pupil, or a hemiparesis, or some of those other focal signs described above

If the patient is not rested sufficiently after apparent recovery symptoms of persistent contusion which have so far been latent, may appear after his return to work These may last for months or even years It is in these cases that one is often left in doubt as to how much is organic how much due to anxiety, and how much to impending compensation proceedings

The headache of neurosis is a continuous discomfort rather than a true and agonizing pain Inasmuch as it arises from a painful memory, the patient cannot have been the victim of true concussion with its essential amnesia Even though such a headache is discovered about this time, if

there is a history of stupor [illegible] lasting [illegible] four hours or more after the original injury [illegible] is should [illegible]gh the scale down on the side of some of [illegible] [illegible] ful inquiry I could be minda too about the patient's mental [illegible] [illegible] ivities before the date of the accident

Ritchie Russell [3] made [illegible] [illegible] on the survivors in his cases Of these he examined [illegible] after their discharge from hospital, 95 had no abnormal [illegible] that [illegible] under had residual symptoms Headache was still [illegible] more conspicuous among the younger patients [illegible] [illegible] had been unconscious for less than twenty four h [illegible] [illegible] in 21 Its incidence was greater as age advanced [illegible] chiefly of a minor degree for instance a mild aphasia [illegible] concentrating on one's business memory disturbances and [illegible] But some of those who had been unconscious for more than twenty four hours had already degenerated into a state of dementia Nervousness was more common among the children, and in them changes of character always for the worse, depravity, delinquency and undue backwardness at school were more marked Nine cases still complained of insomnia

It is not irrevelant at this juncture to discuss the possibility of the occurrence of a subdural hæmatoma for this insidious and inscrutable sequal may come on presently, or weeks or even months after the original trauma Its treacherous progress, or its sudden emergence in the guise of a rapidly increasing intracranial pressure requiring immediate intervention may very easily constitute an obscuring blur in the picture of persistent contusion It is a more common complication than is generally supposed It is seldom seen after fracture of the skull or an intracranial operation, but its traumatic origin is well established These hæmatomata occur at all ages half of them under the age of 30 [7] The trauma may be slight or considerable It may be due to a succession of hæmorrhages from a torn cortical vein, a tributary possibly of one of the dural sinuses This succession accounts for the latent interval It is commonest in the parietal area, and bilateral in a third to half of the cases

The hæmatoma is surrounded by a membrane whose characteristics are known but the origin of which is still in some doubt On its inner side adjacent to the arachnoid membrane, it consists of a single layer of mesothelial cells This layer is without blood vessels and does not adhere to the membrane On its dural side the hæmatoma has a fibrous layer which is adherent to the dura and from which fibroblastic processes penetrate the clot within The contents of the sac are gelatinous clots surrounded by a coffee coloured or sometimes a colourless fluid Some regard the membrane as the result of the hæmorrhage others as its cause It is capable of absorbing cerebrospinal fluid, thus increasing the size of the hæmatoma [11]

Headache is the most constant symptom, it is frequently unilateral

Sometimes the intracranial pressure is increased sometimes not There may be vomiting with a slow pulse sometimes there is papilloedema, and frequently slight pyrexia The patient is drowsy and mentally confused but the salient feature of the picture is a fluctuation in the depth of this state of drowsiness and stupor It may vary from a condition of irritability in the less drowsy moments down to a state of deep coma at its worst These symptoms after a head injury and the characteristic fluctuations just referred to should put one on one's guard but of course there may be focal symptoms as well such as alterations in deep reflexes, a hemiparesis, or a dilated pupil, and sometimes there is localised tenderness of the skull and dullness on percussion There may be convulsions, dysphasia and cranial nerve palsies and the plantar responses may be extensor The cerebro-spinal fluid is sometimes clear, but it may be xanthochromic Hemiparesis is sometimes a misleading feature inasmuch as there may be a bilateral hæmatoma within the vault of the skull combined with an ipsilateral paresis on the other hand a unilateral hæmatoma is capable of causing bilateral paralytic signs

When diagnosed, the case becomes one for exploration as soon as may be and surgeons are accustomed to explore both sides in the parietal region If the intracranial pressure is not unduly disturbed during the removal of the cystic mass the results of this operation are frequently excellent

Except in cases of compression from hæmorrhage and in certain types of fracture, surgeons tend nowadays to hold their hand The routine treatment is directed towards measures for dealing with the original collapse e.g. heat raising the lower ends of the bed pituitrine, and strychnine if the respiratory centre appears to be embarassed When the stage of reaction has developed it is well to do a lumbar puncture for diagnostic purposes If the pressure is found to be high prop the patient up if low keep him recumbent Should the pressure be normal, then one raises the head and shoulders moderately If meningeal symptoms appear as is usual in subarachnoid hæmorrhage, or again if the intracranial pressure is high then lumbar drainage will have to be undertaken This must be done with caution the manometer being brought into use and no more fluid than is absolutely necessary must be withdrawn Less risky and equally efficient is the use of glucose intravenously, or magnesium sulphate per rectum, at the same time limiting the intake of fluids Dehydration can be overdone and it should certainly not be employed indiscriminately These and similar measures have superseded decompression, except in the case of obvious hæmorrhage. Leriche has recommended hypotonic saline intravenously where the pressure is low It is perhaps better to use chloral and the bromides for sedative purposes, rather than morphia which has a depressant action on the respiratory centres Prolonged rest in bed, and a prolonged convalescence are inevitable in the more severe cases and it is important to avoid an atmosphere of anxiety throughout the period of treatment [4]

On the success [illegible] largely depends not [illegible] confusion The outlook of traumatic [illegible] hopeful in the long run, but there are [illegible] certain serious sequelæ to be considered

On the whole it may be said that on [illegible] invalided from the Service before some [illegible] but in assessing their disabilities in terms of [illegible] that medical officers should realise very fully the [illegible] lesion they are dealing with and the somewhat [illegible] future It is not merely a question of fit or unfit from a Service point of view In the terms of their contract Naval ratings are entitled to treatment, and a full and clear knowledge of the possible sequelæ is inherent both in sound treatment and in the thorny question of disposal of these unfortunate patients

Dealing with the insurance aspect of the subject Ironside has put the major sequelæ in the order of their importance as follows —Residual infections epilepsy cerebral neoplasms and unresolved contusions Residual infections are only common however after penetrating wounds and in them years after the original damage A secondary abscess is liable to follow, due in all probability to foreign matter driven in with the original missile As regards neoplasms Plotter states that there is no evidence that injury has any effect in the production of a cerebral tumour [1] Epilepsy and the persistent cerebral contusion are the remaining considerations

The writer is of opinion that this order must be somewhat modified from the Naval point of view It becomes a question of what can be recognised by us whilst the patient is still under our care that is to say before he is invalided out of the Service and what may happen afterwards not omitting from our calculations the possibility of legal proceedings and compensation and insurance questions at any point in the course of the malady Therefore the order becomes (1) the persistent cerebral contusion proper (2) such neuroses as may be imposed thereon, (3) affective and emotional states which may accrue (4) hystoria (5) epilepsy and its equivalents with moral depravity and deterioration in personality sometimes degenerating into a state of dementia and (6) possible psychoses Two questions assert themselves insistently throughout the period of observation (*a*) can trauma be the actual cause of a psychosis, or is it merely a precipitating or aggravating factor? (*b*) Can latent neurosyphilis be rendered active by trauma? These questions suggest others for instance what interval of time must elapse before the trauma and any subsequent mental aberration can be considered independent of one another and how far do alcoholism or arterio sclerosis modify the picture?

We have first to consider the residual symptoms of persistent contusion Mapother calls the condition traumatic psychasthenia and it is well to

... condition may not ... primitive retrieval ... and ... especially indecision in a ... to ... thing. Nevertheless taken together ... effects may quite reasonably destroy a man's usefulness for any ... work. Again there may be inability to sustain continuous ... or to take part in spontaneous conversation and there may even be ... degree of confusion so that the patient cannot think clearly [14].

How often does one find such a series of symptoms dismissed as ... neurasthenia, their organic origin being completely ignored? True anxiety states may be superimposed on these distressing symptoms, and with good reason, for the patient finds himself wholly unable to adapt his mind to the normal routine of life and particularly to the duties of his former occupation. He fears for his income, and the question of compensation adds to his burden. Some patients reveal intense anxiety lest they may be going insane. Wonted tasks, which they now find beyond their capacity to perform, render them irritable and depressed.

The emotional state has a manic depressive colouring, on the whole it tends towards depression.

The signs of persistent contusion tend to recover up to two years after the accident. If by that time they had not cleared up, they tend to persist and sometimes degenerate into dementia. It cannot be too strongly stressed that the persistent contusion has an organic origin; indeed it constitutes a minor degree of that preceding dementia which is a feature of the more obvious and prolonged mental disturbances. [15]

There is a class of case which is inclined to be anxious and depressed by nature. In this type after a head injury there may be a release phenomenon of anxiety. This can hardly be classed as a psychogenic symptom, and the prognosis is good.

The consensus of authoritative opinion is that neuroses are not so very common after head injuries, what are so often registered as such are in reality the mental symptoms of a major contusion, spread thin. [6] Certainly compensation neuroses and hysterical symptoms are no more common after head injuries than after injuries elsewhere. Nevertheless mental stress may well be an aggravating factor in the genuine symptoms of contusion.

One can hardly imagine a greater mental strain, says Symonds, 'than that of a lawsuit hanging over a man who has nothing to show in evidence of disability besides his own word.' [5] There will always be some, of course, who make the most of their symptoms in the hope of gaining thereby the maximum degree of compensation and perseverate and keep their symptoms up, hysterically inclined persons craving for sympathy who, rather than return to work, take refuge in their symptoms, and then there are the actual constructive malingerers. Purdon Martin declares, 'We may scoff at these but we must be careful to recognize that the difficulty of obtaining fair compensation gives rise especially among the working classes to a great deal of genuine anxiety.' [15]

Conduct, whether normal or pathological, is constantly tinged by emotional tones, moreover we are all creatures of instinct and of habit Behaviom is seldom based on a single conscious motive It therefore behoves the Medical Officer who is dealing with the later stages of a head injury, to recognize and define the organic syndrome of contusion and to estimate its intensity before proceeding to a more elaborate diagnosis Thereafter he should contrast this estimate with whatever else may be imposed upon it, facts first and motives afterwards This duty he will best perform by going very carefully into the patient s previous history, his mental capacity and affective tendencies before the occasion of the trauma consulting relatives and fellow workers and comparing matter written before the injury and after it It may even be worth while to obtain a series of photographs He should remember when contrasting the symptoms of residual cerebral contusion with the symptoms of neurasthenia that retarded intellectual processes and a defective memory, especially for recent events form sound evidence of organic damage In the neurasthenic proper on the other hand he will at once perceive the variability the wealth and variety of the symptoms and the typical headache Instead of a headache with vertigo made worse by stooping or change of position, as happens in the organic case, there will be complaints of pressure on the vertex or a feeling as if a tight band were compressing the head There may be a previous history of neurosis, and most important of all, the patient will recall and describe the accident which in many cases was quite trivial and will reveal no amnesis for the moment of impact which is the salient feature of concussion There is no instance in the literature of an obsessional neurosis being precipitated by trauma

Gross hysteria in these cases of accident is the result of pre existing hysterical tendencies These may be elicited by skilful questioning The more markedly depressed cases are those who are constitutionally of a manic depressive diathesis It has been stated that suicide is on the increase as a result of trauma, particularly after motor accidents If this be true, it is quite possible that these naturally depressed cases are responsible for the rising figure

Epilepsy is went to follow injuries to the head Three questions at once arise What percentage is so followed? How long does epilepsy take to reveal itself after trauma? And, is this traumatic form of epilepsy a new feature in the case, or is it a latent idiopathic epilepsy brought to light as a result of the injury? Trotter makes a guess that about 5 per cent of head injuries become epileptics in due course and he thinks, that if epilepsy is about to occur, the tendency will have shown itself within twelve months [1] Certainly a period of two or three months may be expected to elapse between the head injury and the first epileptic warning If after two or three fits the patient is free from attacks for two years it is unlikely that he will become an habitual epileptic Stevenson [13] who studied a long series of cases of traumatic epilepsy due to wounds sustained in the Great

War, puts the figure at about [illegible] In the matter of the interval one must remember that the first epileptic convulsion is frequently preceded by attacks of *petit mal*, sometimes for months on at night so that they pass unobserved Then, there are [illegible] of epileptic equivalents emotional outbursts automatism dizziness paroxysmal headaches and vertigo It may be that the disturbances are vasomotor in character, for instance, pallor flushing and sweating [illegible] are warning signals More puzzling however are the states of absence [illegible] loss prolonged amnesia and fugue states all of which suggest hysteria There sometimes alternate with true epileptic manifestations Bilis in the Ministry of Pensions, states that the longest claim between trauma and the first major epileptic attack was one of sixteen years This claim was accepted by the Ministry [20]

In connection with epilepsy Spiegel has described the scar tissue and adhesions following *contre coup* lesions and penetrating wounds These adhesions cause drag and sometimes result in epileptoid phenomena Penfield and Foerster [17] have applied encephalography to these conditions and they confirm the effects of traction which distort the ventricles Wagstaffe [16] is inclined to think that those who have had Jacksonian fits at the time of injury are more prone to develop epilepsy later on

In pre frontal lesions there is no aura unless the damage has extended back to the motor area The features of frontal lesions is an alteration in emotional tone In the confusional stage we see elation, in the later periods a change in personality and character so that the patient becomes dull and apathetic peevish and self centred In addition to these serious impairments his memory becomes defective If the damage is in the motor area the latent period is usually short, and as occur, fits are frequent, and there are transient maniacal or confusional states, even hallucinations and delusions There may be a slowly progressive dementia especially if the frontal area is damaged as well Fits are less common in posterior lesions an aura is common enough and as might be expected it is visual or auditory in character just as in temporal lesions we note a distinctive gustatory aura The so called reflex epilepsy which follows superficial wounds such as scalp wounds, is a functional manifestation the result of shock or fear There is no difference in character between the fits of trauma and those of the so called idiopathic epilepsies, which may themselves result from exogenous causes

Pronounced changes of personality and marked irritability in a previously stable individual, are usually signs of an organic lesion [18] Among these changes is one called persistent demoralization It comes on at some interval after the injury and is not necessarily associated with epilepsy It is found most commonly as a sequel to head injuries in children but was quite usual in adults some time after the Great War The condition may be defined as a habitual disregard coupled with consciousness of the anti social character of one's acts in the pursuit of

pleasure of [illegible] psychogeni[illegible] cases but they cannot be [illegible] in this way [illegible] the disease is an isolated event and [illegible] is associated [illegible] which are [illegible] by changes in personality, have been explained earlier in this [illegible] Another change of personality worthy [illegible] the epileptic [illegible] In the vernacular this is known as "Brain [illegible] [illegible] occur in quite respectable characters after imbibing small [illegible] shot It may be a purely post-traumatic sequel but it is sometimes allied with schizoid or convulsive tendencies The paroxysm is frequently accompanied by deeds of violence

Most authorities are agreed that the incidence of epilepsy after head wounds in the Great War has been much under estimated and Bolus is of opinion that simple through and through bullet wounds leave effects quite as severe as those of shrapnel and explosive shells Moreover, epileptic dementia is more frequent and more serious in degree after gunshot wounds than in civil cases

It has been seen that the acute traumatic psychosis tends towards ultimate recovery Major attacks of affective disorder such as the manic depressive psychoses very commonly reveal a neuropathic inheritance and a personal history It would seem that trauma can precipitate a manic depressive attack or render an existing attack acute but to connect the event with the trauma the psychosis must come on within a few months and show some degree of continuity The schizoid or paranoid states which sometimes present themselves during the confusional stages of an acute traumatic psychosis tend to clear up entirely Korsakoff's syndrome also tends to disappear, and aphasia and agnosia and other cortical and subcortical symptoms gradually fade away Should any of them reappear after a period of apparent normality no matter how short they are much more likely to be permanent [14] Whether a trauma can cause, or even precipitate, a schizophrenic psychosis is a question which is rendered none the less easy to answer because of our lack of knowledge of the aetiology of schizoid states Is their causation exogenous or endogenous or both? and what sort of interplay goes on between the possible physiogenic and psychogenic factors in these cases after injury to the head? Only some cases yield a family or personal history, and in some the psychosis appears quite early after the trauma whereas in others there is a considerable interval Mapother is of opinion that "The conclusion cannot be escaped that some of these are direct and physiogenic sequels to head injury [14] To this conclusion he is supported by a number of authorities and his opinion seems to be gaining weight among psychiatrists on the other hand this is not in accordance with the statistics of the Ministry of Pensions

The persistent contusion of trauma tends to ultimate recovery, but not necessarily complete recovery there is sometimes a relapse with pro

gressive deterioration down [illegible] This is [illegible] the production of some toxic [illegible] such as alcohol [illegible] or some chronic disease complicates the picture

There remain to be discussed the connection between trauma and meningo-syphilis, and between trauma and alcohol and finally the disposal of our cases As regards dementia paralytica, there are no reliable statistics to guide us and there are great variations in the rapidity with which general paresis symptoms develop in non traumatic patients There is a general impression none the less among clinicians that head injury plays some part It may be that it creates a *locus minoris resistentiæ* for the spirochæte to lodge in Kinnier Wilson was very sceptical about this he demanded that in order to establish a connection between the two, the symptoms should appear within forty eight hours of the lesion Other authors however are inclined to think that six to thirty months would be a more reasonable interval for the purpose [18] One must not forget that the trauma may be the result of the disease for general paralysis is an eminently suitable disease to precipitate an injury to the head As regards cerebral syphilis, it is known that sudden delirium with paralysis of intracranial nerves often ushers in the active signs of the disease, but these are the identical things that occur in many cases after injury to the head Hence the question as to whether trauma can precipitate or aggravate cerebral syphilis remains an obscure one All that clinicians can say is this that where latent disease exists it appears sometimes to be rendered an active psychosis after trauma

Alcoholics are liable to head injuries as a result of their drinking bouts and it is a common place that injury to the head increases their tendency to suffer from the after effects of quite small quantities of alcohol The practical difficulty is this, that the symptoms of an alcoholic psychosis and those of certain post traumatic psychoses are identical We have already seen that a very respectable imitation of the Korsakoff syndrome occurs during recovery from the post traumatic acute psychosis One thing, however, can be said with certainty about alcoholics namely that they tend to respond with psychotic symptoms to less severe head injuries than non alcoholics, and that their prognosis is less hopeful in an injury of any given severity Where there is a history of alcoholism, it is sometimes difficult to decide whether a traumatic psychosis has been aggravated by the alcohol, or whether an alcoholic psychosis has been precipitated by the injury If there was no known mental deterioration prior to the trauma one would assume that the patient was suffering from a traumatic psychosis aggravated by alcohol Sometimes a head injury precipitates an attack of delirium tremens, but the same applies to other surgical injuries where the head is not affected

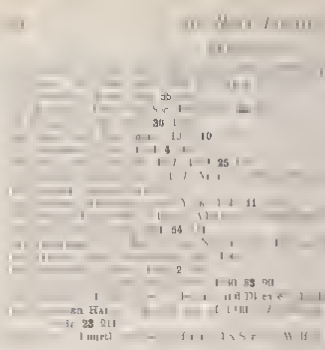
When invaliding the victims of injury to the head, we are confronted with questions of attributability or aggravation and the degree of disability in terms of percentages If the injury is attributable, then its sequelæ are obviously attributable too The injury, however may not be attributable,

[illegible] In the [illegible] well is [illegible] organic [illegible] some metabolic disorder. Each [illegible] must be considered [illegible] before aggravation is conceded. The organic syndrome of the [illegible] contusion should be much more frequently recognized than it usually is, and it should always be remembered that the obvious symptoms of persistent contusion taken together and probably should only after frequent examination of the patient and questioning of his associates, mask a milder or apparently normal man quite unfit even for lighter and less responsible duties. If there is any retardation of intellectual processes, defect of memory, more especially recent memories, and particularly if the patient has lost the power of decision, the disability should be assessed at a considerably higher figure than is commonly the case.

The question of disposal is frequently a matter of anxiety to the Medical Officer in charge. He has to choose duty, invaliding the patient and placing him in the care of his relatives, certification and advising the patient and his relatives as to the means of becoming a voluntary patient at a Mental Hospital in accordance with the Mental Treatment Act of 1930.

One hesitates to send a man to duty if he has fits of depression, if his headache and dizziness are constant, and particularly if he is the victim of anxiety. Nothing makes these patients so irritable, and often anxious as regards their sanity, as to find that they are quite unequal to their accustomed labours. Should one decide to invalid, it is wise to warn the relatives of the man's partial incapacity, of the possibility of fits and their equivalents and emotional upsets at the same time expressing hopefulness as to the outcome in the long run. In the case of a definite psychosis one may be compelled to certify, but even in such a case a hopeful outlook is on the whole permissible. The large bulk of the cases are not sufficiently mental to warrant certification. Falconer Hall, writing in this Journal in 1937, advised that these patients should be persuaded on discharge to attach themselves to the out-patient mental clinic of the nearest mental or general hospital to their homes. In this way their care might be completed without the stigma of certification. When the Mental Treatment Act came into force in 1931, 7 per cent. of the cases were admitted as voluntary patients. Five years later a quarter of the patients admitted to mental hospitals were admitted through the channels of the out-patient clinic, and on a voluntary basis. It is known to the writer that a number of medical officers in charge of our mental blocks are beginning to see the advantage of these facilities, but it is felt that much greater use could be made of them to the relief of the medical officers themselves, if only the system and its workings were more widely known.

In appreciating the state of these cases of residual mental trauma it is well to bear in mind the clinical axiom, "that it is the summation of small things that matters."



ON HEAD INJURIES

By [illegible] and T. B. DAILY, F.R.C.S.

From the Royal Naval Hospital, [illegible]

[illegible] careful observation [illegible] injury to the head has long been recognized [illegible] application of [illegible] head injury is so trivial that it may be ignored. Surgeons [illegible] despaired of [illegible] Yet in spite of this [illegible] advice and of many subsequent reiterations, we are constantly being confronted with the results that follow neglect of our early teachers' warnings.

There is every reason to believe that, even with the most careful treatment and nursing, serious after effects occur from head injuries which at first seemed trivial; there is abundant evidence that the careful management of every case, severe or slight, will tend to lessen the incidence of these sequelæ.

After any serious injury to the head it is probable that the potential efficiency of the brain is lowered and the knowledge of this fact has of recent years quite rightly turned the surgeon's attention and interest away from the more gross anatomical lesion towards a better understanding of those finer processes of cerebral integration the upset of which may be sudden and obvious or insidious and imperfectly understood.

Whatever personal knowledge the neurological surgeon may have concerning the frequency of sequelæ of head injuries, it is certain that the average general surgeon is usually surprised when percentage figures are quoted. His physician colleagues almost invariably deal with these sequelæ

and often [illegible] original [illegible] vital co[illegible]

We have [illegible] up system w[illegible] set in [illegible]

Th[illegible] unalterable [illegible] day to day ex[illegible] mani[illegible] standing of cause and effect and as a result [illegible] percentage of disastrous sequels which [illegible] mental wards for observation

We are all familiar with the term [illegible] contusion laceration traumatic delirium but [illegible] the exact definition in every case Can we separate them Or may not several conditions to exist

Of concussion we have an excellent definition given by Trotter but there are at least four theories in existence Even Trotter's definition must assume a certain elasticity in order to explain certain conditions of which we are still ignorant One well known authority deprecates the tendency to label cases as 'concussion' &c, and treat each as per label If it were invariably easy to affix the label with a clear notion of the underlying pathological state it might be possible to lay down certain rules of routine nature but no such knowledge yet exists A degree of unconsciousness which is slight may be associated with a compound depressed fracture of serious dimensions—indeed consciousness may have never been lost whereas prolonged semi stupor in patients with an unstable mental make up following a slight concussion is frequently a source of puzzling anxiety All stages exists between these extremes and the degree of coma at any given time is in itself no measure of the seriousness of the after effects of the injury The only method we have of arriving at some tangible diagnosis, and so of assessing the immediate and with some hope the ultimate recovery of the patient is by careful and accurate observation from the moment we receive him until he either dies or recovers completely from the immediate effects of his accident

Apart from the usual notes concerning the time and nature of the accident it is most important to find out if the patient lost consciousness and if so, for how long Was there a second lapse after a lucid interval Did vomiting occur Were there fits Interrogation of a witness of the accident is often possible and is frequently a help A relative if one is available should always be questioned, so that one may form an idea of the previous character and personality of the injured one

A note is made of the general condition of the patient the position he assumes in bed or on the stretcher the appearance of his face, and the depth of his stupor Is he truly unconscious or can he be roused by

talking etc. [illegible] his name. If consciousness is lost, orientation upset, and how much can he remember of the accident itself, of the preceding and subsequent events?

The body generally is examined for signs of injury, and particular attention is paid to the head and neck—occasionally one is surprised to find that the injury to the head or neck has been overlooked and the well-known significant symptoms of a fractured base are always sought for.

A careful physical examination is carried out as completely as the patient's condition permits. The cranial nerves, muscle tone, deep and superficial reflexes, sensation to coordination and muscle power. The eyes should receive careful scrutiny, and any abnormality should be noted. At a later date a relative or the patient himself may testify that one pupil was always larger than the other or even that a divergent squint existed. A skiagram is taken as soon as the doctor is satisfied that it will cause no harm to the patient. In certain selected cases a lumbar puncture is performed; this is an entirely safe procedure, if correctly performed and the minimum of fluid withdrawn for diagnostic purposes.

It must be emphasized that repeated examinations are necessary; for in severe injuries the clinical picture changes with the rapidity of a kaleidoscope. A half hourly record of the pulse should be made during the first twenty-four hours in any case where consciousness has been lost, and the doctor should be informed at once of any sudden or progressive rise or fall, or of marked alteration in volume. The onset of vomiting or an increase of stupor, should likewise be reported.

Clinical Varieties and Treatment.—The majority of head injuries require nothing more than careful observation and rest. The rest must be both a mental and a physical one. Such complications as scalp wounds, loss of scalp substance, hæmatoma, &c. are dealt with according to general surgical principles and deserve no special comment.

A minimum of three weeks in bed is insisted upon in every case where unconsciousness has been lost, no matter how short the duration. If any doubt exists the test of amnesia is applied—did he remember the actual accident? He is nursed in a semi-Fowler position to aid cerebral decongestion and the room is darkened and made as quiet as possible. Smoking and reading are prohibited for several days, and the blinds are not raised until he loses his headache and feels more or less normal. Luminal gr. ¼ is given morning and evening, for three weeks and thereafter at night only, for three months. An occasional purgative of magnesium sulphate is recommended. The more active the mentality of the patient the greater the requisite amount of bodily and mental rest. At the end of three weeks he is allowed up for one hour, and this amount of time is doubled daily unless complications like headache arise. If any such complication occurs he is returned to bed for a week, and the gradual process of "getting up" is then repeated. A month's sick leave followed by two months' light duty is advised.

The [illegible] ordinary cases [illegible] cussion we must remember that we are dealing with [illegible] which we have no exact pathological knowledge so that we must [illegible] pare for unpleasant sequelæ Headache is sometimes persistent complaint and will not yield to aspirin or mag sulph purgation A simple decompression operation is recommended by one authority in cases where the headache persists in spite of rest and the usual measures Such a line of treatment has not been found necessary in any of our cases so far but severe and prolonged cephalagia has been successfully cured in more than one instance, by the intravenous administration of iso-tonic sucrose, 50 to 100 c c given very slowly, and repeated if necessary next day The action of the sucrose is said to be more gradual than that of dextrose and less liable to cause a secondary rise of intracranial pressure

Turning now to the more serious type of brain injury where the loss of consciousness is more than transitory we must be doubly on our guard and be prepared to give a grave prognosis There must be few surgeons of any experience who have not at some time or other regretted the expression of an optimism concerning the recovery of a patient who perhaps has been unconscious for half an hour and then appears to have started on the way to normality A succeeding loss of consciousness may not necessarily be due to a middle meningeal hæmorrhage but to a rapidly progressive cerebral œdema which may soon prove fatal

When we speak of traumatic delirium we make use of a term to describe a clinical condition which is well known to all but about the causation of which there is still much doubt The various theories are discussed elsewhere and it would appear that several factors are at work—contusion of brain substance laceration of brain substance hæmorrhage, œdema and neuronal interruption This stage of irritation or delirium may be encountered at two stages, and may give rise either to anxiety or a feeling of hope It may follow after a comparatively short period of what was thought to be concussion, and rapidly succeed those symptoms of apparent recovery which are familiar—vomiting, nausea, headache and vertigo These irritative phenomena and stupor increase our anxiety The depth of the stupor is all important as are also the physical signs of local injury In the presence of the latter and of increasing stupor no delay in surgical intervention The second stage at which traumatic delirium may be met is at the end of that deep and prolonged state of unconsciousness which follows a so called major contusion of the brain Here it is a hopeful sign towards recovery, though relapses are by no means unknown

Much difference of opinion exists concerning the treatment and especially the operative treatment of traumatic delirium The case with focal signs and increasing stupor admits of no argument, but what of those patients with no focal signs and a more or less stationary degree of stupor or delirium? It is in this last named type of case that opinions

differ s[illegible] imperfe[illegible] Russell pr[illegible] and the pressure of th[illegible] may rightly be argued th[illegible] of place Others urge that a co[illegible] and that the blood and exudation [illegible] spinosum It is also insisted that [illegible] spinosum practically without dur[illegible] such an authority as [illegible] unopens the skull over [illegible] intracranial pressure [illegible] perforating, a craniotomy is often hurried [illegible] strong reasons for suspecting this method [illegible] Operative [illegible] brain which is already in the throes of traumatic aphasia can do nothing to help the patient unless the condition is complicated by [illegible] intracranial pressure Make sure that pulse is [illegible] blood pressure is below normal

The use of hypertonic saline may often give one a useful line concerning the underlying lesion but it must be admitted that this is not always the case There [illegible] vomiting is connected with its use such as the precipitation of pulmonary [illegible] if it is administered too vigorously and it in early stages two pints [illegible] hours at least should elapse before such treatment is instituted Hutchison points out that dehydration is only of benefit during the second [illegible] oedema which never comes before the second or third day The employment of glucose intravenously is now generally preferred to hypertonic saline as its effect is less rapid and more lasting Sucrose and novarsenobillon serum,[1] are said to be even more beneficial in bringing about a slow progressive and lasting dehydration The rectal administration of magnesium sulphate (6 ozs in 3 ozs of water) twice daily is also a safe and useful method and should be persevered in for three days to bring about the maximum effect Fluid intake must be limited Venesection has been recommended but I have never tried it It is in these cases of doubtful etiology that a lumbar puncture may be of help, but the difficulties in its performance may be insuperable

By the use of dehydration methods one may be able to decide with a fair degree of certainty that an increase of pressure is at least part of the cause of the condition and a relapse would strengthen the argument for operation

While discussing cerebral dehydration it may not be irrelevant to observe that Trotter in discussing intracerebral bleeding has suggested that in a deeply comatose subject where there is difficulty in deciding the location of the haemorrhage an intravenous hypertonic saline may temporarily relieve the intracranial pressure sufficiently to present a definite clinical picture It need hardly be said that in such a case everything must be ready for immediate operation

[redacted] to [redacted] du not [redacted] more [redacted] exception [redacted] natural [redacted] head injury and it is well to remember that [redacted] almost fifty per cent of cases and usually in the [redacted] These lesions must and [redacted] manifestations [redacted] be missed if borne in mind It is [redacted] most likely to be overlooked and [redacted] puncture is the worst possible [redacted] risk of [redacted] This warning also holds good [redacted]

The treatment for the [redacted] of the brain may have to be explor [redacted] operation and the tapping of the lateral ventricle by a [redacted] skull has been opened, may be [redacted] of the haemorrhage

Compression of the brain due [redacted] emphasize its rarity It is usually due to injury sustained by the [redacted] meningeal artery, and by its [redacted] but it may follow [redacted] of one of the large venous sinuses It will always be discovered [redacted] careful watch is kept over the patient and the treatment is immediate craniotomy A lumbar puncture with the withdrawal of only a few c.c.m. of fluid may give helpful information concerning the site of the haemorrhage but the very minimal amount must not be exceeded for fear of increasing the bleeding

An interesting observation made by Battle Rawlings, and recorded by Hamilton Bailey is that occasionally a middle meningeal haemorrhage may decompress itself through the ear where a fractured base coexists This would be a rare but nevertheless urgent indication for operation Apart from this complication the treatment for fractured base consists very largely in good nursing combined with attempts at dehydration if the need should arise Some authorities recommend daily withdrawal of 10 c.c. of cerebrospinal fluid if other methods fail

Fractures of the skull are mentioned last merely to emphasise their relative unimportance as compared with the possible associated cerebral injury Basal fractures in no way differ from those of the vault and frequently both are combined The only justification for their separate consideration is the fact that they are usually compound and that there is a special risk of cranial nerve injury It is stated that lesions of the 1st 7th and 8th nerves present the worst prognosis

Fractures of the vault may be quite unsuspected but the routine radiological examination of every case of head injury will prevent any mistakes

in this [illegible] stated here that the [illegible] ray picture [illegible] opinion [illegible]

Of the various [illegible] types of fracture the depressed and the compound are the only ones calling for active surgical treatment in the adult Some delay may be justifiable in the case of the former when it [illegible] the so called silent areas in the frontal region, but with the compound variety, immediate and thorough operative attention is essential The scalp wound must be excised, and the bone and dura, immediately surrounding the injury or injuries removed cleanly No attempt should be made to seek deeply for any such object as a bullet, and it may be thought advisable to insert a small drain down to, but not through the dural wound It is not necessary nor indeed advisable to suture the dura A precautionary intravenous injection of 5 c c of a 40 per cent solution of urotropine is said to lessen the liability to infection, as the drug is rapidly excreted into the cerebrospinal fluid

A final word may be said about two common complications of cerebral injury—the tendency to pulmonary or urinary disorders A careful watch should be kept for signs of early pneumonia and the appropriate steps taken at its onset Retention of urine must be guarded against and Murphy has pointed out that prostatic massage will often obviate the necessity for instrumentation Many surgeons prefer a suprapubic cystostomy to the risk of causing a serious urinary infection by the continued passage of a catheter

If too much that is elementary has been stressed or a certain amount of confusion created in the mind of the reader his indulgence is besought on the plea that the obvious is oft forgotten and that conflicting statements even if arising from imperfect knowledge may yet lead to a better understanding If a little knowledge is dangerous where is the man who has so much as to be out of danger ?

REFERENCE

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SLIGHT HEAD INJURY

By Surgeon Lieutenant Commander J D Simpson M B M R C P R N V R

In the last quarter of a century a very great deal has been written of the after effects and treatment of serious injuries to the skull and brain Most of this work has been done in the big hospitals where the increasing toll of the road brings more and more cases every week The minor head injury has not received its fair share of attention in the medical press primarily, because slight cases of head injury if they progress satisfactorily, are never seen by members of hospital staffs they are spread over the case records of the doctors in practice throughout the whole country Each medical man could quote from his own experiences cases of mild head injury which had

[illegible] a few days and then had suffered [illegible] comparatively slight [illegible]

[illegible] conditions where [illegible] plays a [illegible] opportunity such is this has been vouchsafed to [illegible] the last seven years since I started practising in the University of Cambridge. Here the chances of seeing minor head injuries are immeasurably greater than in panel practices where the men do not attend the doctor unless they are seriously incapacitated. Here again the standard of efficiency demanded is so high and slight disability such a serious handicap that the injured are frequently seen a few minutes after the time of the accident or at any rate, very shortly after the onset of headache even if that does not appear for a day or so after the injury.

A study of a series of about 150 cases has brought to light certain factors in the diagnosis, prognosis and treatment, which may be of value to medical officers in charge of service establishments where similar opportunities of early investigation and treatment exist. The most important single fact is that the patient who is brought for treatment within a few moments of his injury although his injury is of sufficient severity to produce unconsciousness for as long as five minutes and a retrograde amnesia of some hours will make a much more rapid recovery than the man who is only stunned but has no treatment for three or four days until headache is well established.

In the Service and University the same ultimate object exists that of getting the patient back to efficient work as quickly as possible. It may be said that this is the universal aim of medicine but under Service and University conditions the requirement is much more marked than in the case of the manual worker, city clerk, or hunting man. The standard text-books of medicine and surgery lay down that after a head injury a man should be kept at rest for three weeks. In some cases this is obviously far too long in others entirely inadequate and it was to clarify this situation that my investigations were started.

The following points in the initial examination are of special prognostic value:—

(1) The position and type of the blow. The worst type of blow is from a small hard object on the back of the head as this type of blow is more likely to produce a contusion than one which is more diffuse on the face. Thus a blow with a cricket ball on the back of the head is much more dangerous than one with a football in the face. Blows on the face very rarely produce severe injury. An exception to this dictum occurred when a man who had a saddle back nose was struck across it by a squash racket. Instead of producing a collapse of his nose a solid bess of bone transferred the force straight to the base of the brain and he had all the symptoms of a mid-brain contusion. Another case in which the whole of the superior maxilla was shifted did not have the least symptom of concussion in fact

he never [illegible] upper jaw

Retrograde [illegible] and an initial period of [illegible] five minutes [illegible] prognostic sign if the [illegible] type The [illegible] they were [illegible] three minutes [illegible] even perfectly [illegible] and suffered no [illegible]

A very slight [illegible] after an hour in so [illegible] of intracranial [illegible] such a case should be carefully watched In this connection it must be remembered that the man in first class athletic training has a [illegible] of from 48-56 instead of the normal 72 Slight vomiting, dizziness and sluggish reaction to light or accommodation are serious signs and should be taken as a warning that a prolonged convalescence will probably be necessary The routine treatment that has been carried out in all cases in the early stages is the same in every case in which there has been [illegible] unconsciousness or even dizziness after a blow on the head, is put to bed for forty eight hours The case is raised sitting up, is purged violently the fluid intake is cut down to 30 oz in twenty four hours Sedinal is administered as a sedative, and during the forty eight hours a careful history of the accident is obtained from all those in others involved in it

After forty-eight hours the patient is again carefully examined and placed in one of three categories —

(1) Simple concussion a state of which the pathology is unknown

(2) Simple concussion coupled with mild general contusion

(3) General and, or local contusion of the brain

(1) Those suffering from simple concussion have by this time lost their headache and are practically free from symptoms the pulse blood pressure and eyes have returned to normal They are made to sit up in bed rather rapidly and give the head a gentle shake if they can do this without any feeling of inconvenience, on the following day they are allowed out of bed and, after they have adapted themselves to the upright posture they are made to do the simple test for Romberg sm This will probably be negative if it is on the following day they are made to hang the head down to the level of the knees and then stand up If this test produces no symptom on the next day they are made to repeat the processes but while the head is hanging down to the level of the knees they are made to shake it violently two or three times and then stand up This will probably not produce any symptoms at all They are then discharged on probation with the instructions to sleep propped up and to keep their bowels very free to drink very little fluid to eschew alcohol completely and to start doing a little intellectual work each day to do a little more increasing by hourly increments At the end of a further week, if they are entirely free from symptoms they are discharged

(2) In this group which we classify as simple concussion and contusion after forty eight hours there is commonly found a slight slowing of the

pulse-rate [illegible] may be raised [illegible] accompanied by [illegible] sitting up in bed [illegible] of the [illegible]. A routine [illegible] is then [illegible] of 2 [illegible] per cent. magnesium sulphate is [illegible] to the patient and [illegible] as possible. The patient is [illegible] sitting up and not allowed to read or have visitors. A wireless set is permitted for short periods as it allays boredom, produces peace of mind and reduces the amount of enforced inactivity which is naturally found in active young men. After a further twenty-four to forty-eight hours the first stage of the headshaking test is repeated, and if negative on the following day, the patient is allowed to stand out of bed for a few moments. The sequence of tests is then applied but with a longer interval than in the case of simple concussion. Discharge may be possible after about fourteen days.

(3) The cases described as suffering from simple contusion are those who complain of headache but who have not lost consciousness. The same treatment and sequence of tests are applied to them and it is usually found that they cease to have symptoms after some ten to fourteen days.

In a large series of cases this method of treatment has been found to be effective in reducing the period of initial disability, and in only 1 per cent. of cases have there been returns of the symptoms of headache and dizziness after the men have been discharged.

This method although valuable from the point of view of checking the convalescence following head injury is by no means infallible as it has little or no effect on the psychological changes which may follow a blow on the head. Men of nervous, excitable temperament tend to suffer from loss of power of concentration, dreams, and in one case of my series the man became definitely maniacal, in spite of the fact that he was able to carry out headshaking test 4 (the last one in which the head is hung down to the level of the knees and shaken) perfectly easily. In another case of severe concussion in which a man was unconscious for five minutes and had a retrograde amnesia of one hour and could not remember anything after the accident for twenty-four hours, this series of tests was applied, and although his power of co-ordination had returned to such an extent that he was able after three months of his injury to reach the finals of a county tennis tournament, it was two years before his intellectual capabilities had returned to anything like normal.

The headshaking tests are also of considerable value in the diagnosis of men suffering from headache where the history is somewhat doubtful. Those whose headache is due to concussion can rarely carry out the tests, men with a high blood-pressure or sinus infection also have difficulty, in toxic cases, and hysterical people the headache is usually unaffected after the tests, if they are carried out carefully.

To summarize. A series of tests useful in the control of convalescence of cases suffering from head injury is described, the value of dehydration is stressed, and the fallacies of the tests pointed out.

[illegible] AND COLSULANYDE IN THE TREATMENT OF GONORRHŒA

[illegible] D. F. WILSON.

In the [illegible] in 1937 Surgeon Comm[illegible] published a [illegible] cases of urethritis who [illegible] with prontosil [illegible] in addition to the [illegible] mist. His [illegible] cases of gonorrhœa, of which 83 were acute, were into[illegible] in ten days. 24 were chronic and 8 were cases of non-gonococcal urethritis. His results were brilliant, 91 cases being cured in about one third of the time usually required to effect a cure. The average period of treatment for acute cases was just fifteen days; for chronic cases 11·4 days; and seventeen days for the non-gonococcal cases. Of the 91 cures, 49 were cured after a maximum of ten days' treatment. The details of his treatment were given in his paper. Briefly, it consisted in the average case receiving 30 c.c. of prontosil soluble and 8 oz. colsulanyde over a period of ten days, during which time urethral irrigations were carried out. In the majority of cases tests of cure were commenced on the eleventh day, though when necessary the course was prolonged, duplicated or even nearly quadruplicated in one case. This was exceptional, and in his summary and conclusions Surgeon Commander Cream was of the opinion that if a case did not respond to the treatment within fifteen days it was unlikely to respond to a more prolonged course. Only two instances of toxic manifestations were noted.

I was greatly interested in this paper, as most people who treat a large number of cases of gonorrhœa must have been, and I took an early opportunity of adopting Surgeon Commander Cream's treatment. Though I have not been able to achieve his wonderful results, I thought that an account of my hundred cases might be of interest, and that their publication might induce others either to publish their results, or to lead them to describe any modification of this treatment which their experience may have suggested to them.

It is well known what wide differences occur in a comparison of the end results of any two series of cases of the same disease apparently treated by identical methods, but treated at different clinics. To account for these differences is not always easy, but there are several factors which should be kept in mind. Minor variations creep into the technique and are apt to pass unnoticed in the general survey of the cases. In my series, as compared with Surgeon Commander Cream's, it will be noted that no patient received more than ten days' prontosil and colsulanyde. This was indicated by prudence, due to the larger number of reactions encountered. Moreover, in the last half of my series I introduced a two-day break in the middle of the course, no prontosil or colsulanyde being given on the sixth

or seventh day, the course then finishing on the twelfth day 1 10,000 solutions of potass permang and hydrarg oxycyanide were used The tests of cure are not identical No urethral installation of silver nitrate was made, nor was a provocative injection of gonococcus vaccine given Patients were examined daily for urethral discharge over a minimum period of eight days A two glass urine test of the first morning specimen was examined daily, and during the observation period anterior urethroscopy passage of a sound and examination of a prostatic smear took place No case was considered cured if there was a morning dampness containing other than epithelial cells spermatozoa or debris or if the prostatic smear showed more than four pus cells in a field The proportion of acute cases is smaller

There are always individuals who fail to react to a drug or exhibit an idiosyncrasy to it There is individual variation in response to an infection, as well as variation in the virulence of strains of the infecting organism It was a common impression in China, and one which I shared that gonorrhœa contracted from a Chinese woman was more difficult to cure than the average case at home Though I cannot bring forward any proof in support of this contention it is possible that the gonococcus of the Mediterranean ports may be more virulent than the home strains and so an additional emphasis might be laid upon an increased virulence of the infecting organism in my series I do not think that climatic conditions can be inculpated in any way The general standard of health and physique of the patients were good, and debility due to service abroad was not noted

TABLE OF CASES TREATED

Gonorrhœa				
A = Acute	Infection present	1 10 days		21
B = Subacute		11 20		11
C = Chronic		21	upwards	96
Non gonococcal				
D = Acute	Infection present	1 10 days		1
E = Chronic		21	upwards	1
				169

Cured at the end of a ten day course

A =	3
B =	5
C =	13
D =	3
E =	0
	24

These figures are disappointing, in comparison with Surgeon Commander Crean's results, in which 46 out of 68 acute cases were cured by the

[illegible] [illegible] x 8 out of [illegible] [illegible] the [illegible] [illegible] higher [illegible] rate. The [illegible] cases [illegible] to be [illegible] equally divided between the two sections of the series, [illegible] introduction of the interval period cannot be accounted the main [illegible] for failure.

Persistence of gonococci in urethral smears after the course:—

A 16
B [illegible]
C = 11

31

[illegible] the failure of the acute cases is apparent, 60 per cent. of [illegible] cases treated showing persistence of gonococci after completion of the course. Of these 31 cases only 11 occurred in the first half of the series, but 8 of the 11 were acute. In the second half of the series 20 cases showed persistence of gonococci. The total cure rate in the two sections was 11 and 13 respectively, which would seem to indicate that the two day rest period did not adversely affect the cure rate. In spite of this I feel that the numbers dealt with are too small to be conclusive. I think that the large increase in gonococcal-positive [illegible], which occurred after the introduction of the rest period, is most significant, and a definite warning that interruption of treatment should be avoided if at all possible.

Complications directly due to the treatment:—

A = 5
B = 1
C = 8

14

[illegible] patients developed rashes, which appeared one or two days after [illegible] of the course in the majority of cases. The initial lesions were [illegible] papules which rapidly coalesced and resembled a measles rash. When fully developed the eruption was of a raised, bright red, urticarial type. Neither vesiculation nor haemorrhagic infiltration was noted. Itching [illegible] a marked feature, and the temperature was not raised above [illegible] in any case. The exposed parts of the body, neck, upper chest and [illegible] were first affected. None of the patients was acutely ill, [illegible] becoming normal in forty-eight hours, and the rashes fading [illegible]. Headache, loss of appetite and a feeling of depression were of common occurrence during the early stage of the course. Cyanosis was clinically marked in two patients, but no spectroscopic changes were noted when the blood was examined. The cases with rigors and dizziness

[illegible] rash pyrexia once. [illegible] led to a speedy cure of the symptoms.

Surgeon Commander Green encountered only two cases of toxic [illegible] one of which was severe involving loss of consciousness. I had [illegible] first 50 cases. Though they were of a mild character I thought that it was worth while to determine whether or not the incidence could be reduced without affecting the results of the treatment. With this end in view I introduced the two day rest period in the middle of the prontosil solubile course. Only five patients developed complications in the second half of the series.

I noted no after effects in those patients who had shown a toxic manifestation, but, so far, I have not again administered sulphanilamide preparations to these patients. The early distribution of the rash suggested that sunlight was an exciting factor in their development, and I now forbid patients to sit in the sun whilst they are under treatment. This measure has reduced the incidence of rashes very considerably but has not entirely abolished them. As I am of the opinion that prolongation of treatment beyond the tenth day is necessary in the majority of cases it might be wise to keep the patients in bed until three or four days after the course.

Leucocyte Counts

The blood examinations were made between the seventh and ninth days of the course. No toxic changes were noted. It has not been found possible to demonstrate a relationship between the leucocyte count and the probability of an early cure, nor does it appear to give any indication as to the probability of the development of a toxic reaction.

Complement-fixation Tests

A single test does not give any help in the prognosis of a case. To be of value repeated tests are required at consistent intervals, and even then it must be remembered that the clinical interpretation of the results is not simple. Carried out according to the technique of Price the test is undoubtedly specific for gonococcal antibodies. In 89 per cent. of untreated cases the test becomes positive by the fourth week of the infection. In early acute cases the test is negative, as there is a latent period required for the elaboration of the antibody, and very little stimulation to its production when the infection is an open one. If treatment is efficient and undertaken early, it would be reasonable to expect a persistently negative complement fixation test, combined with an early clinical cure. A prompt cure did not materialize in 88 per cent. of my acute cases though the complement-fixation tests, in so far as they have been done, have tended to remain negative. In the acute and subacute groups eleven cases gave negative tests immediately after the course, three being again negative one month later. Five others showed negative results three to six weeks after the course. Yet these cases were failures. It seems as if partial success

was obtained [illegible] so far as the treatment had been able to limit the infection to a superficial extension of the host without being sufficient to achieve cure This may have been due to the treatment being too curtailed, but as the chronic cases made a better response to the same amount of treatment it seems as if some co-operation on the part of the body had not had time to be facilitated or had been inhibited from doing so, in the acute cases

The method by which prontosil acts is still in the realm of theory Levaditi postulated the formation of an X substance in the reticulo endothelial system which was concentrated there by the azo dye Long and Bliss believed that the drug exerted an action on the phagocytes which enabled them to deal with the organism Another theory put forward by Levaditi and Osgood was that of neutralization of the toxins Consens is of opinion favours the process being in some way a vital one not to be explained in terms of the chemical actions of the drug Whether it acts by affecting the organisms more than the body is not decided but the action on bacteria is not a direct one as has been abundantly proved by *in vitro* experiments If the action of prontosil is only to stimulate the non specific defences of the body, the earlier the treatment the better should be the results The existence of a methal discharge is evidence that diapedesis has taken place due to a local defensive reaction of the tissues, and the earlier the reaction can be strengthened the more rapid should be the cure In practice I have not found it to be so Prontosil produces its most dramatic action in the established infections, especially those of the streptococcus The patient has had time to develop a specific response to the invading organism before the administration of the prontosil If this specific reaction is a necessary corollary to the action of prontosil then in acute gonorrhœa a short course of treatment might easily be completed before any specific reaction had taken place Whether this response is in the form of an antibody which is capable of demonstration by complement I am not in a position to discuss, but from the nature of an early gonococcal infection one would expect any specific response to be a slowly evolved procedure more likely to be adequately advanced in the chronic rather than the acute stages of the disease

Relapses

I have been able to follow up only thirty patients of this series Three cases relapsed Two of them were originally prontosil failures The third was a transferase classified as observation cure He became gonococcus-positive within a few days of leaving hospital, and is really a failure, not a relapse, and is shown as such in the records One case was returned relapse, six months after leaving hospital His history showed three previous infections of gonorrhœa with multiple exposures to infection on each occasion which made me somewhat dubious of his avowed continence during the six months under consideration

[redacted] completion

[redacted]

[redacted]

Beginning [redacted] nt after the c [redacted]

[redacted]

A hundr [redacted] y [redacted] ty [redacted] prontosil and [redacted]

12 per cent of the [redacted]
23 [redacted]
25·7 [redacted]

Toxic reactions occ [redacted] cent of cases None of the reactio were severe

The two day interv [redacted] lle of the course reduced the numbe of reactions but [redacted] ber of gonococcal-positive urethral discharges at the conclusi [redacted] tment

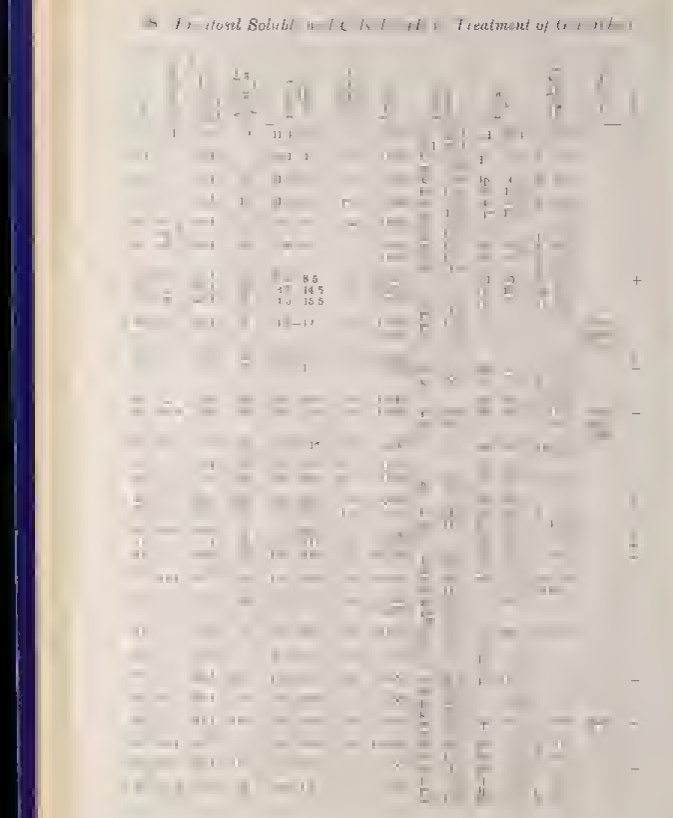
It has not been foun [redacted] correlate the leucocyte count with th prognosis of the treatment [redacted] with the occurrence of toxic effects

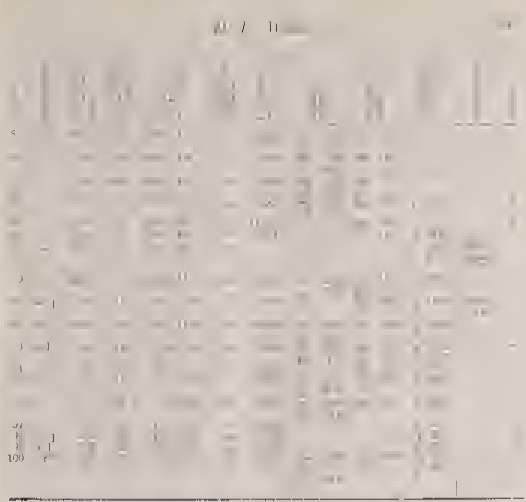
If toxic effects could be [redacted] d, prolongation of the course would be desirable in the majority of ca s

In my experience the best results are not obtained by the early administration of prontosil and colsulanyde A similar finding is reported by Colkins and McElligott who have just published a most valuable paper on Sulphanilamide in Gonorrhœa Dealing with the records of 683 cases their experience has enabled them to make authoritative statements which clear up many of the points I have discussed The necessity of

more prolonged treatment than I have given, and the avoidance [illegible] eruptions are clearly demonstrated; and in connection with the [illegible] application of these two points they have found that it is quite [illegible] continue treatment in the presence of minor toxic manifestations. [illegible] stress the importance of the mobilization of the patient's defence [illegible] a process which they estimate to take about ten days. In their hands the results of sulphanilamide administration before the tenth day of the infection were increasingly poor the earlier the drug was given.

[illegible]	[illegible]	[illegible]	Age of [illegible]	[illegible]	Urethral [illegible]	Leucocyte count	Urethral smears	Prostatic smears	Complement fixation test	[illegible]	[illegible]
1	[illegible]	10 2	2	10 2—18 2	yes	7 600	gc 21 2 gc 23 3 gc 4 3	fpc 22 2	n [illegible] 2 [illegible]	1	—
[illegible]	[illegible]	2	18	11 2—20 2	no	13 000		fp [illegible] 2	vp 11 2 vp 26	[illegible]	
[illegible]	1	10 11	95	11 2—30 2	no	6 100		[illegible]	[illegible] 11 2		1
[illegible]		[illegible]	24	11 2 20 2	yes	9 600	fpc 21 2 [illegible] 24 2	cd 21 2	[illegible] n 11	[illegible]	
[illegible]	[illegible]	1 2	118	12 2 31 2	no	9 100 12 000		pcc 2[illegible] 2 cd 25 2		—	+
[illegible]		[illegible]	15	12 2 21 [illegible]	yes	10 000	gc 23 2 gc 28 2 gc 21 3	pcc 28 2 cd 4 3	n 11 [illegible]		
[illegible]		[illegible]	[illegible]	12 2—21 2	[illegible]	10 800		fpc 21 2	[illegible]		+
[illegible]		[illegible]	11	12 2 21 2	no	9 300		pcc 22 2 cd 25 2		—	+
[illegible]		[illegible]	[illegible]	1[illegible] 2—[illegible] 2	yes	9 700	pcc 28 2 pcc 4 3	pcc [illegible] 2 pcc 3 3	p 4 [illegible] [illegible] 11 [illegible] [illegible]		—
[illegible]	[illegible]	[illegible]	1 9	15 2 24 2	no	[illegible] 100	pcc 25 2 pc 1 3	fp 21 2	dn 4 n 11 3 [illegible]		+
[illegible]		[illegible] 1	18	15 2—21 2	no	9 200			11 2	—	
		1	27	15 2 [illegible] 2	no	11 800		cd 20 2	n 20 2	—	+
		11 [illegible]	15	[illegible]	yes	12 400	pcc 2 [illegible] pcc 27 2 pcc 3 3	fpc 28 2	p [illegible] 2		
[illegible]		11 2	10	15 2—24 2	yes	8 100 15 200	gc 27 2 [illegible] 28 2 pcc 1 3	cl 28 2	1 26		—
[illegible]	[illegible]	[illegible]	20	16 2 24 2	no	5 000	pcc 4 3 pcc 7 3 cd [illegible] 3	[illegible] 18 3 fpc 2[illegible] 3	[illegible] 26 2	[illegible]	—
[illegible]		[illegible]	41	15	1 3	yes	10,200	pc 26 2 gc 26 2 gc 21 3	cd [illegible]		1	—
[illegible]		[illegible]	111	11 2 25 2	no	9,000			1 1 [illegible] 11		
[illegible]		1 1	[illegible]	1[illegible]	no	5 800	pcc 4 3 pc [illegible] 1 fpc 14 3	fpc 1 3 d 11 1	[illegible] 1 2		—
[illegible]		[illegible]	[illegible]	18 [illegible] 2 1 —2 1	no yes	[illegible] 200	gc 4 3 gc 11 3	fcd 1 1 pc 1 1 pc 8 3	n [illegible] 2 [illegible]	[illegible] 4 3	+
[illegible]	[illegible]	[illegible]	[illegible]	2[illegible] 1	[illegible]		gc 6 1 gc 16 3	fpc 1 1	n [illegible]		





SOME CASES OF ENTERIC FEVER

Lieutenant-Commander R. H. BARRETT, D.T.M. & H., R.N. (Retired)

I VENTURE to place these cases on record for two reasons. [illegible] rather unusual circumstances in the course of [illegible] and, secondly, the course of the infection in two of the [illegible] and presented some unusual features.

The ship concerned arrived and was boarded at the unconscionable hour of 3 a.m. The Ship's Surgeon had reported the presence of a case of suspected infectious illness by wireless. This case was still undiagnosed at the choice appeared to lie between miliary tuberculosis and enteric fever. The patient was in a cot in the ship's hospital and was found to be in a profuse night sweat which had soaked both his pyjamas and sheets. He did not look phthisical but he had a slight cough and a few rales were heard in his chest on auscultation, his temperature was intermittent, the spleen was just palpable. The pulse-rate was however only 80 as compared with a temperature of 100°F. In view of the history of onset and the clinical signs then elicited it was decided that typhoid was the most probable diagnosis, and arrangements were made for admission to the Isolation Hospital.

On looking round the hospital before leaving the ship I noted that three other cots were occupied, and on enquiry it appeared that these three patients had all gone down practically simultaneously with headache and *malaise* about four days before and had been running temperatures ever since. It was thought at first that they were cases of influenza which would clear up before arrival in port and no report had been made by wireless in consequence, but they had failed to do so, and the question now arose as to their disposal, for they were still unfit to travel. On examination the first point noticed was that, although the temperature was in each case well over 100° F. the pulse rate was only 80. Moreover their history showed that they were not contacts of each other or of any other case of influenza in fact they each came from a different part of the ship, and did not normally meet. In view of the existence of one clinical case of enteric on board it seemed not unlikely that other cases might also have occurred. The temperature pulse ratio was also suspicious and so was the history of onset. But what seemed more important at the time was the fact that none of the three men made any protest at the prospect of being sent to hospital, and they must therefore have been far more ill than the average occupants of a ship's hospital. They were transferred to the Isolation Hospital the next day together with the first case.

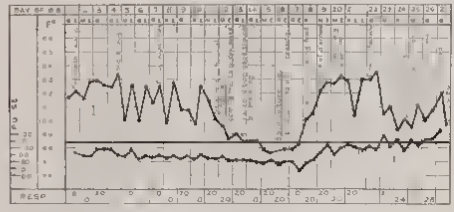
On arrival there a blood sample was taken for Widal. It proved negative in the first case and a weak positive in the other three. The

clinical data in the first case were now how ver[illegible] with the diagnosis that the Widal was repeated and [illegible] taken. The Widal was again negative but the culture proved to be *B. typhosus*.

It was therefore plain that there had been four cases of typhoid in the ship of which only one had been suspected and reported as such the others had been found more or less by accident. This is of importance from a Public Health point of view because other cases may have been in the incubation period and have gone home apparently well only to succumb later in surroundings less well suited for the treatment and prevention of spread of the disease. It also shows how careful the Medical Officer of a port must be in making enquiries about illness on board whether illness is reported or not. There seems to be some evidence to show that the sporadic outbreaks of enteric that occur from time to time may possibly have their origin in an important case which has been allowed to go home because of the triviality of the symptoms, or because the incubation period was sufficiently long to prevent symptoms presenting themselves before the patient arrived home.

The following is a brief account of the clinical course of the first case —

Case 1.—A man aged 33. He had reported sick ten days previously with a severe headache and malaise, temperature 101·8° F., pulse 98, respirations 20. Three days later he developed a slight cough but no sputum was produced, there were no localizing signs in his chest and only a few scattered rales were heard. A swinging temperature and the onset of profuse night sweats suggested the possibility of a diagnosis of miliary tuberculosis.



Case 1.

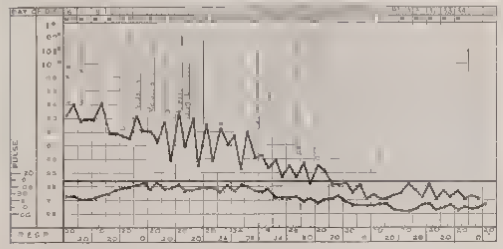
On admission to Isolation Hospital his condition was: Not looking very ill in spite of the apparent severity of the symptoms. Temperature 100·1°, pulse 80, respiration 20. Tongue white fur, moist. Mucous membranes of good colour. Heart, N.A.D. Pulse good volume, regular, no dicrotism. Lungs, scattered rales only. Abdomen, there was a generalized tenderness, but no rigidity or distension. The spleen was palpable. Bowels were constipated, an enema produced a well formed stool. Urine N.A.D.

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loralizing signs He
began to appear toxæmic During the twenty third day
steadily passed into a state of
ow muttering
countenance of
and
by the twenty fifth day
drowsy with his eyes wide
tonically
thead
ally shouting
question
and
could then give
unintelligently lapsed into his
state From this
onward his
rapidly
his delirium became violent and he was
got out of bed
allowing his
to
ugly
mouth and larynx The
rate
rising and
delirium
laborred and he
rapidly
into a state
fixed stare with wide open eyes the
the
loose mucous rattle in the
together with
bubbles formed a picture
to
forgotten The
day of his illness

to
been
before
the
The brunt of the
seems to
mental and although
did not
great
quite
short of
The
were
collected
witness His
and
During
these
the usual localisation of the infection
What
throughout may suggest that the
antibodies and that my
with no resistance The
and
sixteenth day and the
fatal The
sense of
and unsatisfactory
upon which a
light This was
but

He was the first of the patients seen who
The onset in his case was marked by
black
drowsy man Temperature 103 pulse
white fur with clean tip and edges Mucous
heart and lungs N A D Abdomen spleen

[illegible] col
[illegible] ding weak a[illegible] ndacl and back
[illegible] Two days l[illegible] was noticed that his
[illegible] tongue had becom[illegible] ra mion and an excess
of [illegible] He also complained [illegible] On the ninth day of
[illegible] ness the drowsiness [illegible] he restrained from
getting out of bed in the [illegible] ning as he lay in a
semi unconscious state By [illegible] had reached 100, and
his lips and tongue were [illegible] ch day he passed a
stool consisting of dark [illegible] became rather



CASE 3

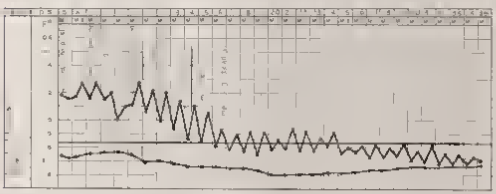
cyanosed Two days later he passed another stool containing clots and bright blood he was still drowsy and rather restless but no longer delirious On the fifteenth day he had incontinence of urine and fæces and the next day he passed a similar stool containing clots In spite of this his condition had begun to improve although the pressure points on his back had started to form inflamed and small pustules were forming on the skin On the nineteenth day it was noticed that he would only lie on his right side no matter what position he was turned to his respiration rate had also increased to 24 A small pleural effusion was found to have formed at the right base and there were signs of consolidated lung tissue immediately above it The left lung was clear Fortunately this condition did not progress but began to clear up quickly so also did the skin condition which at one time appeared to be on the point of breaking down On the twentieth day he was obviously better his lips and tongue were moist and there was no longer any cyanosis On this day he passed a dark tarry stool but with no fresh blood and two days later passed a stool clear of visible blood On the twenty fourth boils began to appear on the back of his right wrist and a small abscess formed on the right malar region The latter was opened and healed without trouble In spite of these minor complications he improved steadily and by the twenty eighth day was well on the road to recovery He was discharged home three weeks later

The early temperature chart in this case was not available but it may be of some consequence that for the first few days of his stay in hospital

[illegible] time was irregular, the [illegible] the infection had not been established. [illegible] of the mucous membranes gave warning [illegible] the intestines. The complications of [illegible] effusion, infection of the skin and hemorrhage from the [illegible] interest us samples of what any case of typhoid may have in [illegible] final recovery was gratifying and shows that a multiplicity [illegible] does not necessarily mean a fatal conclusion.

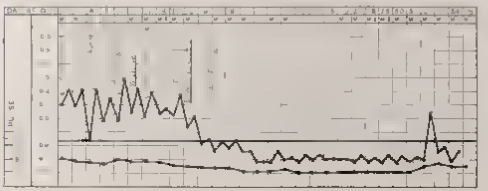
[illegible] A boy aged 23. The onset was accompanied by headache [illegible] and discomfort.

[illegible] — Not looking ill. Temperature 101°F, pulse 82, respirations 20. Tongue, white fur with clean tip and edges. Heart and lungs N A D. Abdomen, [illegible] palpable, bowels constipated. Enema produced a well formed stool.



Case 3.

The course of the illness in this case was uncomplicated, and typical in its every respect. Slight cough, dysphagia and several pease up stools were the only symptoms of note. Ten days after admission he was feeling comfortable and eating and sleeping well. He made an uneventful convalescence.



Case 4.

[illegible]

On [illegible] Not [illegible] pul[illegible] (respi[illegible]s 20 Tongue clea[illegible] Heart n[illegible] [illegible] spleen palpable Bowels constipated

This case is of interest [illegible] only, first because he was the only one of the four on which [illegible] were seen and secondly because although the clinical course was completely uneventful up to the thirty second day, he then for no apparent reason produced a temperature of 100 4°1 On investigation it was discovered that the upset was entirely psychological, and that for some reason he had started worrying about himself This shows that part of the treatment must consist of continual reassurance that all is well

These two cases are included only as contrasts to the first two being as colourless as the latter were eventful

Conclusion

The most important point to be learnt from these cases seems to be the symptoms on which a diagnosis of early typhoid can be based The following features were common to all —headache backache slow pulse constipation

These do not entirely agree with those given in the textbooks hence they may prove of value in pointing to a diagnosis in the absence of other signs such as the well known dichrotism palpable spleen and diarrhœa Spleens are in any case fickle things and it is not every medical officer who can feel a slight enlargement with certainty

One final remark is necessary on the subject of delirium and coma Two of these cases were in this condition at one time during the course of their illness, and in a consideration of the differential diagnosis of such a condition it is suggested that typhoid should be given a place

[My thanks are due to Dr Hugh Willoughby for access to his notes and records and to Dr Morgan, M.O H Port of London, for permission to publish this paper]

SUBMARINE SINKING

By Surgeon Lieutenant Commander S Jenkinson R N

Introduction

In the event of the sinking of a submarine, if practicable as an emergency measure the warship nearest the scene would be detailed for rescue operations and treatment of the survivors The following notes have therefore been compiled from various sources, for reference

When a submarine cruises on the sea surface, the oxygen content of the air rarely falls below 20 per cent and the carbon dioxide rarely exceeds 1 per cent. Changes in the chemical composition of the air can proceed further without causing discomfort When a submarine is submerged no

[illegible] and after a time the carbon dioxide will increase [illegible] oxygen diminish dependent on the number of crew and the [illegible] if air circulation of air is maintained by punkah-louvre and [illegible]

In the event of accident owing to impracticability of salvage submarine [illegible] warning, the Davis Submergeil Escape Apparatus from the [illegible] Chamber or Escape Compartment according to the class of [illegible]

The Davis Submerged Escape Apparatus (short title D S E A) provides [illegible] escape from a submerged submarine, and can be converted into [illegible] reaching the surface. It is entirely self contained and can [illegible] at least half an hour. When escaping the survivor puts [illegible] and breathes oxygen from it. The carbon dioxide is [illegible] lime granules. A rubber apron is stowed beneath the [illegible] which when held out delays the ascent of the wearer to [illegible]

In the modern type of British submarine two escape chambers are [illegible] the hull leads fore and aft which have watertight doors [illegible] compartments. The controls of the escape locks [illegible] from either of the compartments or from the interior of [illegible]. With these locks there will be no need to flood the [illegible] the men can make their escape they can be used [illegible] by [illegible] in case of emergency would be for two men to enter the [illegible] wearing the Davis apparatus close the watertight doors [illegible] the lock and use the trapped air and, when the equalization had taken place, open the hatches float through these and escape to the [illegible] The hatches would then be closed and the locks emptied by [illegible] the water and the next two men would enter the lock and the process would be repeated.

Certain submarines of the British Navy are fitted with an airtight [illegible] trunk attached in a watertight manner to a certain hatch and [illegible] for use. When required it is pulled down, and secured [illegible] so that the lower end is about three feet from the deck. The [illegible] compartment is partially flooded and the trunk is released by [illegible] and the hatch is then opened. The men stand round the trunk [illegible] under the escape trunk and ascend through the hatch [illegible]. The escape compartment is fitted with an oxygen cylinder [illegible] manifold which may be utilized for the charging of the [illegible] breathing bags. So long as the atmosphere is com- [illegible] the flooding of the escape compartment will be delayed until it [illegible] that possible ships are at the surface. The compartment will then [illegible] until all dispatch to minimize the period of breathing by the men under increased pressure. When the compartment is flooded and the hatch ready for opening the men begin breathing oxygen from their escape apparatus. But if poisonous gas is detected the escape set will

[illegible] pressure is [illegible] and as up must then [illegible]

[illegible] which the crew may suffer before their escape — [illegible] oxygen starvation [illegible] oxygen poisoning chlorine [illegible] will be the instruments to test the principles of the [illegible] which are involved in the consideration of the above disabilities.

In the event of insufficient aeration of the arterial blood of the survivors in the submarine hyperpnœa dyspnœa convulsions and coma from asphyxia, will result. The stimulus to the normal respiration will be dependent upon the degree of tension of carbon dioxide and also of oxygen in the arterial blood. Increase of the carbon dioxide tension will result in hyperpnœa while diminution of the oxygen tension will result in apnœa. But need for oxygen is associated with accumulation of carbon dioxide. The tension of carbon dioxide has the greater influence in excitation of the respiratory centre. A slight increase in the percentage of carbon dioxide in the air causes an increase in depth and frequency of respiration. A rise of carbon dioxide of 2 per cent causes an increase in respiration by 50 per cent and alveolar ventilation by 70 per cent. But increase of the partial pressure of the carbon dioxide will be more important than the percentage increase since, whether at the summit of Ben Nevis it will be millimetres mercury pressure and a percentage of [illegible] carbon dioxide or when submerged at 1,230 millimetres mercury pressure and a percentage of 6·5 carbon dioxide the tension of the gas will remain approximately the same, it 40 millimetres mercury (Starling). Thus the pressure of carbon dioxide in alveolar air remains constant with varying [illegible] of pressure.

The law for oxygen is different for oxygen tension varies with the pressure. By the reduction of the percentage of oxygen at constant pressure from 21 to 14 per cent there will be no alteration in respiration but with further diminution men become blue and lose consciousness suddenly before discomfort is felt.

By the law of solubility of gases in liquids the amount of carbon dioxide and oxygen in the blood will vary with the partial pressure of the gases. At normal pressure about three volumes of carbon dioxide are carried in the hæmoglobin and about 50 volumes are carried in the plasma combined with a bicarbonate to form a base. This explains the carriage of carbon dioxide in the blood in larger quantity than is normally held in physical solution.

Respiration is not affected by increasing the tension of oxygen which normally is just sufficient to saturate the hæmoglobin, but if the partial pressure of oxygen be increased oxygen poisoning results since enough oxygen is then taken up by the blood to supply the tissues. The acid hæmoglobin is not reduced and therefore retains the available base which normally combines with carbon dioxide from the tissues. Thus it is the rise of pressure and accumulation of carbon dioxide in the tissues which

[illegible] pressure

Having consi[illegible] physiological principles [illegible] discuss the sym[illegible] signs of carbon dioxid[illegible] oxygen starvation, and o[illegible]

After prolon[illegible] dependent on the number of men there will be an increase [illegible] rule in, and deoxygenation of the blood will increase [illegible] carbon dioxide when the escape compartment is being flooded. [illegible] when there is 1 per cent of carbon dioxide in the air at the time the flooding of a compartment, in order to escape, at three hundred feet would cause an air compression of ten atmospheres and so the effect on the carbon dioxide to rise to 10 per cent, which percentage [illegible] symptoms of fainting and a profound fall in blood pressure that [illegible] paralysis of the vaso-motor centre and heart failure would prove fatal. (Starling.)

Oxygen starvation occurs when the oxygen saturation of the arterial blood is reduced, is indicated by cyanosis, due to a slowing of the circulation. As oxygen starvation may be associated with excess or deficiency of carbon dioxide in each case the clinical picture will be different. With excess of carbon dioxide the resulting vaso dilation causes a purplish cyanosis, dyspnœa and a bounding pulse, while with deficiency of carbon dioxide, for example improper use of the escape apparatus the cyanosis will be of a pale lavender colour, the breathing rapid and shallow, and the pulse thready.

The breathing of oxygen under pressure will cause direct death to the tissues, or at lower pressures a convulsant effect and congestion of the tissues. At normal pressure pure oxygen may be breathed for about an hour without ill effect but for a longer time may bring on consolidation of the lungs. The limit of safety for breathing oxygen is ten atmospheres or 300 feet of water. Warning symptoms are tingling of fingers and toes, twitching of muscles especially the mouth, convulsions and coma.

Disabilities from which the survivors may suffer: compressed air illness, carbon dioxide poisoning, oxygen starvation, oxygen poisoning, chlorine poisoning, distension of lungs, shock.

The symptoms of compressed air illness are an ache or pain in a joint usually the knee or elbow, which is flexed, pain in the stomach, vomiting, headache, diplopia, hemiplegia, convulsions, paraplegia and coma. Exposure to high air pressure and a rapid return from high to low pressure are the causative agencies, and the effects of this are the presence of nitrogen bubbles of variable size lodging in the fat of a joint or nervous tissue, and causing derangement of function. Limitation of time of exposure to a high pressure and regulation of return to normal pressure will obviate these effects.

Chlorine gas causes coughing, cyanosis or pallor, collapse, painful dyspnœa, frothy expectoration and vomiting. The cyanosis, whether of the

ll nl [illegible] grey type in [illegible] [illegible] t oxygen The irritant g is causes inflammation and colle [illegible] thus there is an interference with gaseous exchange betw [illegible] and [illegible] er in the lungs increased by thrombosis of the pulm [illegible] [illegible] Carbon dioxide being a more soluble gas than oxy [illegible] will [illegible] through a liver of liquid at a higher rate than oxygen tending t [illegible] [illegible] f carbon dioxide in the blood and tissues As pulmonary [illegible] develops insidiously or rapidly cyanosis appears, and both nervous system and heart are impaired through the shortage of oxygen The respiratory centre fails and still less oxygen is inhaled Collapse ensues with rapid shallow respiration feeble pulse cold clammy skin, and leaden hued pallor

Distension of lungs is due to an increase of pressure in the buoyancy bag of the escape apparatus during ascent from the submarine, when the exhaust valve is not opened whereby expansion of the lungs pressure on the heart and asphyxia results

Differential Diagnosis It is unlikely that men suffering severely from carbon dioxide poisoning oxygen poisoning, oxygen lack and chlorine poisoning will escape from the submarine, owing to supervention of asphyxia and collapse Men who have sustained partial gas or chlorine poisoning will have put on their Davis Submerged Escape Apparatus whilst in the submarine escape compartment and will have breathed oxygen under increased pressure They will therefore have suffered from oxygen poisoning, and on escape from the submarine unless the ascent to the surface has been sufficiently gradual the survivors will have compressed air illness.

To distinguish between oxygen poisoning and compressed air illness one must try to elicit a history from the survivors, e.g was escape apparatus worn and used? Was oxygen breathed from apparatus during the flooding of the compartment if so for what length of time? The depth of the submarine will be known from soundings, the time taken to flood the compartment before escape whether the ascent to the surface was gradual or rapid

One must also compare symptoms and signs thus —Pain in the joints and stomach with paralysis followed by coma suggest compressed oxygen poisoning

Carbon dioxide poisoning and oxygen starvation have already been discussed earlier in this paper 'Blue' asphyxia will result from excess of carbon dioxide in the blood i.e carbon dioxide poisoning and oxygen starvation with excess of carbon dioxide "White or Lavender" asphyxia will result from oxygen starvation combined with deficiency of carbon dioxide, e.g oxygen supply failure in D.S.E.A due to the exhaustion of supply or improper regulation of the valves

Chlorine poisoning has also been discussed The characteristic cough will serve to distinguish this form of poisoning

[illegible]

The longer a man has been [illegible] under water the longer will be the time taken to revive him There is more risk on surfacing [illegible] of collapse due to carbon dioxide poisoning Oxygen want or chlorine poisoning will require a prolonged period of artificial respiration Schaefer's method is adopted in order that the Novox resuscitation apparatus may be applied synchronously The Davidson gas of the Novox apparatus (which is carried in capital ships) by virtue of its mixture of 7 per cent carbon dioxide and 93 per cent oxygen stimulates the respiratory centre and musculature, the mask of the apparatus being applied to the nose and mouth of the patient and gas delivered automatically on inspiration from the cylinder Cases of gassing collapse when exposed to cold air will require bed, hot water bottles, hot drinks (sweet tea) and friction as requisite Absolute rest for some hours is necessary and observation in cases of relapse Depressant drugs are withheld

After picking up survivors the depth at which the submarine is lying being known if the symptoms and signs indicate compressed air illness the Davis Submerged Escape Apparatus should be re applied or a new set put on and oxygen breathed deeply for ten minutes at atmospheric pressure to wash out nitrogen bubbles Physical exercises are carried out synchronously to liberate bubbles of nitrogen from the tissues thus the tendency to compressed air illness is lessened or prevented, and the treatment may be carried out while transporting the survivors to the recompression chamber

The recompression in cases of coma, 'bends' or paralysis, is dramatic in its efficacy Unfortunately, the compressed air illness is sometimes not recognized and recompression is not utilized even when means are available Cure may be achieved if recompression is adopted within four hours, after onset of symptoms In the event of delay, however a higher pressure and longer decompression will be necessary The recompression chamber must be spacious, have a door and window inlet and outlet valves a gauge supply of compressed air warmth to neutralize cold due to release of compressed air A trained attendant is also required for arranging the bedding, towels decompression tables, hot water bottles and timekeeping during recompression

The first few pounds of pressure is run up quickly it is then slowed up so that the point at which the patient is cured may not be overshot i e when the pain or paralysis is relieved Even 15 lb pressure has a definite effect on the size of the nitrogen bubbles, and most cases are cured at less than 50 lb pressure The patient exercises during recompression and is massaged by an attendant until the pain eases For paralysis, continuous pressure for an hour at 100 lb may be required if relief is not then evident, further recompression is useless

The means of recompression available are as follows (1) A ship fitted with a Recompression Chamber e g H M S *Tenacity* or *Cyclops*, (2) to send a survivor down again, in a diving suit if physically fit to withstand this

measure (3) Recompression [illegible] submarine [illegible] torpedo compartment is tested to 35 lb per square inch [illegible] and there is space for seven patients with floor [illegible] heating [illegible] for heating water room for exercises telephone [illegible] Thus although 35 lb is the [illegible] yet most of the patients would either [illegible] with [illegible] (4) Ship's Boiler If a ship's boiler [illegible] would be required If the supply [illegible] pump could be utilized as an additional [illegible] tion purposes (5) An Escape Chamber [illegible] take two or three men [illegible] exercises (6) In new construction [illegible] designed to withstand a pressure [illegible] thus be realized that there [illegible] could be recompressed Several [illegible] regarded as a desperate measure but even so they might well result in the saving of life or crippling

Treatment of Chlorine Poisoning When once oxygen has been administered, and the disadvantages under which the heart is labouring have been removed, cardiac stimulant drugs may have a valuable additional effect To aid discharge of exudate from the lungs, natural vomiting is a help while raising the foot of the bed will improve position and assist drainage Pain in the respiratory passages may be relieved by chloroform inhalation and irrigation by [illegible] solution

The usual routine measures [illegible] for shock

SUMMARY OF MEDICAL ARRANGEMENTS

In general as for Action Stations

I While proceeding to scene of the [illegible]

II When at scene

I While proceeding Preparation for reception of casualties

(a) Shock Draw bedding clothing [illegible] restoratives

(b) Resuscitation

Nitrox Resuscitation Apparatus [illegible] from a capital cylinders of Dicarbox Gas [illegible] warding

(c) Inhalation

Draw Davis Submerged Escape Apparatus [illegible]

Spare cylinders of oxygen for [illegible] DSEA

(d) Recompression

Preparation of a chamber in a [illegible] compartment [illegible] or escape channel [illegible] marine or use of [illegible] for [illegible]

Artificial Respiration Carbon Dioxide Poisoning
Chloroform Oxygen Cardiac [illegible]

(*f*) Dressings for reception station
Dressings utensils instruments

(*g*) First Aid Outfit
Field valise with chloroform [illegible] bags tongue forceps gag

(*h*) Stretchers with Parties Labels [illegible]

Rapid Transport Party

Conveyed to scene in a destroyer
Medical Officer with pocket instrument
Sick Berth petty officer with field valise
Writer with labels and notebook

Equipment of Rapid Transport Party

Novox Apparatus Davis Submerged Escape Apparatus
D S E A oxygen cylinders

II When at Scene

(*a*) Survivors suffering from Compressed Air Illness manifested by pain in stomach or limbs paralysis coma Onset of symptoms immediate or up to one to three hours

Treatment Davis Submerged Escape Apparatus oxygen and exercises for ten minutes

Stretcher parties convey casualties to ship having chamber suitable for recompression or air lock—or to a submarine for recompression in Torpedo Compartment or Escape Chamber Friction exercises blanks clothing bedding, in the recompression chamber

(*b*) Survivors with collapse oxygen poisoning oxygen starvation Carbon dioxide poisoning chlorine poisoning shock

Stretcher parties convey survivors to Sick Bay and to Wardroom (First aid stations)

Artificial respiration by Schaefer's method and resuscitation by Novox (Carbon Dioxide Gas) Rest warmth, oxygen brandy

(*c*) Wounds and Burns Dressings

(*d*) Information—Casualties to Captain

Name, Rank Rating, Official Number Next of Kin Religion, whether Dangerous Serious or Moderate casualty

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METHYL CHLORIDE [illegible] AND ITS EFFECTS UPON THE SHIP'S [illegible] IN A SUBMARINE

By Surgn Commander [illegible] RN

SINCE the use of methyl [illegible] in domestic refrigerators a good deal [illegible] appeared in the medical journals Very few cases [illegible] recorded in the Services, though two mild cases of methyl chloride intoxication were reported from a British destroyer where two men were overcome while repairing a domestic refrigerator

Some cases which occurred in an Italian submarine were reported by Major Dr R M F Dorello in "Annali di Medicina Navale e Coloniale May to June 1938

It appears that the submarine, whilst engaged in exercises during a summer cruise was compelled to return to its base, because the ship's company were affected by a form of poisoning which affected so many of the personnel, that the normal efficiency and duties of the submarine were interfered with The submarine had set out with the whole ship's company in good health and had completed without incident many hours surface cruising and had submerged four times with intervals of surface cruising of fifteen to seventeen hours between each dive

During the last two dives both the regenerating plant and the air cooling plant were put into operation The regenerating plant consisted of electric fans distributed in various places, which drew air from the vicinity and passed it through receptacles containing sodium hydroxide returning it again to the interior of the submarine freed from carbon dioxide This plant had been put into operation for one hour during each of the two last dives The air cooling plant on the other hand was fitted with a refrigerating plant working on the methyl chloride principle the methyl chloride being contained in cylinders arranged in both the forward and after compartments of the vessel It was in operation for the last two dives, as mentioned above later the working of this methyl chloride plant was suspended owing to defects in its working This turned out to be a fact of vital importance in view of subsequent events

During diving the temperature in the boat varied between 95° F and 100·4° F , but in the motor room it exceeded 101° F appreciably The humidity was about 95 per cent and personnel suffered from intense thirst and profuse sweating, due to the heat and the supersaturation of the air in the boat

Meals were prepared and consumed on board regularly, either from fresh foods purchased before departure and preserved in refrigerators or from tinned foods carried as reserve rations The water carried in the

water [illegible] drunk by [illegible] no cause for any remark or complaint [illegible] De Rotsation by hydro vanni [illegible] precautions afterwards [illegible] three weeks before the [illegible]

During the [illegible] personnel had noticed especially when first entering the [illegible] on deck in the fresh air a peculiar musty smell which [illegible] as "of a sour character and some as like some substance [illegible] It left a disagreeable taste in the mouth and irritated the [illegible] On the fourth day of this present [illegible] just after submerging for the second time that day, the first three [illegible] methyl chloride intoxication appeared The next day the number [illegible] jumped up to twenty one and on the third day reached thirty [illegible] which was 70 per cent of the total complement The vessel was [illegible] proceed to return to its base Without any apparent cause or reason [illegible] affected complained of general indisposition of severe headache [illegible] dimness of vision followed by persistent vomiting, accompanied [illegible] cases by outbursts of weeping with complete aversion to food and [illegible] General prostration slowly set in, with weakness particularly of [illegible] lower limbs which prevented the victims from walking and even from standing up, so that they were totally unfit to carry out their duties The urge to sleep was insistent and even when a man was awake his state of continual somnolence led to mental torpor rarely broken by moments of [illegible] lucidity during which individuals were forced to carry out their [illegible] duties with difficulty The victims were compelled to stay on deck in the fresh air even for several hours but this caused no improvement in their condition whatsoever

On arrival of the submarine at its base the ship's company were [illegible] examined They looked 'bloodless,' with stupid, profoundly [illegible] expressions, combined with a general state of mental depression The skin of the face was moist with perspiration Their tongues were dry [illegible] coated with excess of bluish white mucus, the breath was foul, without [illegible] any characteristic odour They had frequent attacks of retching [illegible] bringing up of mucus tinged with bile They had periodic bouts of weeping [illegible] no reason at all Examination of the respiratory and circulatory [illegible] revealed no abnormalities except a rapid feeble pulse Nothing [illegible] found in the abdomen except epigastric discomfort brought on by the [illegible] vomiting

By this time the nervous system had practically recovered, but the following were some of the signs found The pupils were sluggish in [illegible] to light and to accommodation the superficial and deep reflexes [illegible] difficult to obtain (torpid) there was slight paresis in the lower [illegible] especially affecting the flexor muscles with marked general hypotonia [illegible] Elsewhere areas of paraesthesia and of hyperaesthesia were found

Two cases showed loss of voice and difficulty in speaking (a feeling as

if the to... Several ... weakenc... of vision ... and space ... and very ... simplest ... taken in slowly and the answers given tardily Many of th... pressed a great desire for sleep and complained of great lassit... for hours and hours without any desire for meals

During the tw... in submarine ratings an apparently good physical condition had exp... moments of complete forgetfulness of their proper duties, performing or attempting to perform wrong operations Changes in demeanour were also noted, such as irritability and deterioration in discipline and conduct toward superiors The greater number of those affected got steadily worse during the return voyage to the base (this suggests a slow continuous leakage of methyl chloride)

In hospital recovery was rapid in most cases, and complete in three to four days The more serious cases, however, had attacks at increasing intervals, each attack less intense of headache nausea outbursts of weeping drowsiness bad dreams and digestion disturbances The symptoms of dulness apathy mental torpor and above all of muscular weakness were the most persistent A partial loss of memory was a particularly persistent disability Seven months elapsed before the last case returned to full normal duties

On entering the submarine when she arrived at her base, Major Dorello the author of this report noticed a musty smell of confined air, and also a peculiar sour smell which after a time left a bitter taste in the mouth and a feeling of irritation in the naso pharynx

All analyses of the food and water from the vessel gave negative results The cause of the symptoms, therefore was sought in the air breathed in the boat Asphyxiation through lack of oxygen was easily excluded There remained the possibility of the presence of a toxic gas

In submarines toxic concentrations of the following gases may accidentally occur —

(1) Carbon Dioxide (produced in respiratory exchange)
(2) Chlorine (from storage batteries)
(3) Sulphur Dioxide (from batteries so Major Dorello states)
(4) Arseniuretted Hydrogen (from impurities in battery plates)
(5) Methyl Chloride (from air cooling plants and refrigerators)
(6) Carbon Monoxide (from exhaust gases of Diesel engines)
(7) Non saturated Hydrocarbons and allied substances (from Diesel engines)
(8) Products of combustion or decomposition (from lubricating oils)
(9) In the case under consideration Hydrocyanic Acid Gas remaining after the de-ratisation

Carbon dioxide can be ruled out for the same reasons as lack of oxygen was there being no respiratory embarrassment

Chlorine and sulphur dioxide can be rejected because their characteristic odour was not present nor their intensely irritating effects on the respiratory system

Poisoning by arseniuretted hydrogen is very unlikely nowadays, because of the precautions taken to ensure purity of the sulphuric acid and the absence of arsenic in the battery plates

Hydrocyanic acid gas may also be excluded as thorough ventilation was used after decarbonisation and there is little likelihood of toxic concentrations of gas remaining unnoticed in the boat for so long

Methyl chloride is a volatile substance at ordinary temperature and pressure recently introduced into Italian submarines as a result of the installation of refrigerating apparatus, both for preserving foodstuffs and for the air cooling apparatus The characteristic odour of this substance was not noticed by the personnel (*see* commentary which follows later) Moreover, on the arrival of the submarine at its base the methyl chloride cylinders were found to be at a pressure less than that originally present when the cruise started This was enough to confirm a leakage of methyl chloride over and above the loss of methyl chloride due to ordinary working of the plant

The symptoms to be expected from methyl chloride intoxication are giddiness, vomiting, nausea a condition resembling drunkenness, delirium, ataxia obstinate somnolence, ptosis diplopia and more rarely, in severe cases convulsions (*see* commentary which follows later)

Major Dorello ruled out methyl chloride on the grounds that the concentration of this toxic substance could not be great because the symptoms did not fit in and because methyl chloride symptoms rapidly disappeared when the victims were brought into the fresh air

In the commentary to follow later it will be shown that all these arguments are false As regards concentration the argument falls to the ground because methyl chloride is a cumulative poison, as regards symptoms, they fit in perfectly and as regards the disappearance of symptoms when the victims are brought into the fresh air the contrary is the experience of most observers

Major Dorello decided it was proved that carbon monoxide was the toxic substance to blame in the Italian submarine He argued that examination of the blood of the personnel of this submarine by spectroscope showed 6 per cent of carbonyl-haemoglobin Mr Frederick, Assistant to the Professor of Hygiene, Royal Naval Medical College, Greenwich commenting upon Major Dorello's findings, points out that carbon monoxide can only be detected in the blood with any certainty by the use of instruments of extreme precision and that 6 per cent is commonly found in the blood of smokers and must be considered to be not an abnormal amount Major Dorello further reported that analysis

of the [illegible] submarine only gave evidence of the presence of carbon monoxide in very small quantities Therefore, it appears that Major Dorello was wrong in his conclusion that carbon monoxide was [illegible]

COMMENTARY

A paper was published in the *Lancet*, February 2 1935 by Allan Birch, reporting a case of methyl chloride poisoning He points out that methyl chloride is a gas with a molecular weight of 50 4804 It is usually supplied compressed in cylinders It is colourless boils at 23° C, has a faint sweet odour, and is non irritating to the respiratory tract It does not form explosive mixtures under ordinary conditions He states that the toxic symptoms produced by it are drowsiness and confusion followed by muscular weakness, giddiness nausea vomiting and ocular symptoms such as diplopia and mistiness of vision The pupils are usually dilated and react sluggishly to light The onset of symptoms is slow, and the patient may appear to be mildly intoxicated for days

Another paper was published in the *British Medical Journal* of March 24 1934 by Arthur P Gorham entitled Medical Aspects of Methyl Chloride He quotes illustrative cases and remarks that the toxic effects are produced usually by unnoticed leaks taking place in enclosed or ill ventilated places If the leak is a slow one or the gas becomes diffused and diluted in the atmosphere its existence may never be appreciated or suspected The gas is slowly excreted so that the effects of small quantities may become cumulative and cause symptoms only after some days

He summarises the symptoms as follows The onset is one of progressive drowsiness and apathy, going on to stupor, with nausea vomiting and abdominal pain Muscular tremors may be present and may be followed by toxic convulsions, with marked cyanosis, in severe cases Ocular signs and symptoms may be prominent The pupils are usually dilated Ptosis and nystagmus have been noted, also amblyopia The temperature nearly always rises pulse and respiration rates are increased Anuria occurs in the more severe cases The blood pressure is lowered and the blood picture is one of primary anæmia, with a moderate leucocytosis The sequelæ noted have been ataxia insomnia, vertigo and dimness of vision which may last for months Gorham states that one of his cases had been thought to be coal gas poisoning But carbon monoxide, he says is known to show a sub normal temperature in contra distinction to methyl chloride, which causes a rise of temperature in the patients The cerebro spinal fluid is normal in cases of methyl chloride poisoning which fact helps to exclude meningitis and encephalitis from the possible diagnoses

On comparison of Major Dorello's cases with those described by Birch and Gorham several interesting points emerge In Birch's case there appeared symptoms which agree well with those shown by the submarine ratings It is of special interest to note that he finds that the symptoms

are slow in onset and that the patient may appear to be mildly intoxicated for days. Gorham's remarks are particularly applicable to the Italian submarine cases. For he says "the toxic effects are produced usually by small and slow leaks. If the leak is a slow one or the gas becomes diffused and diluted in the atmosphere its existence may never be appreciated." This is exactly what appears to have happened in the submarine. Gorham also says "The gas is slowly excreted so that the effects of small quantities may become cumulative and cause symptoms only after some days." This also applies to the submarine cases. As regards the symptoms described by Gorham mouth does not seem to have occurred among the Italian cases. No comment can be made about raised temperatures, as Major Dorello does not mention this point. Gorham also finds as in the case of the Italians that symptoms such as ataxia, giddiness, dimness of vision may last for months. The Italian reported drowsiness with bad dreams whereas Gorham finds insomnia.

Another point of interest is that Gorham states that one of his cases was first thought to be a case of carbon monoxide poisoning.

I have to thank Surgeon Captain Parker and Mr. Frederick for their helpful comments upon Major Dorello's paper. Mr. Frederick pointed out that, from the evidence, the toxic substance in question must have been methyl chloride and not carbon monoxide.

SOME MEDICAL ASPECTS OF TRINCOMALEE

By Surgeon Lieutenant-Commander J. Mansel Betts, R.N.

Most medical officers who have served in the East Indies Squadron have at some time or other visited Trincomalee. I have been invited to give a brief account of the work carried out there during the past two years, as it is thought that this will be of interest to readers of the Journal.

As long ago as 1816 a small Naval Yard was instituted at Trincomalee (Admiralty Order in Council, May 6th, 1816) under the superintendence of a Naval Commissioner. Victualling and Medical Establishments were added in 1819, but the latter were discontinued about three years later. The Yard became gradually of less importance until 1901, when it was closed down, to be reopened in 1923 under the Superintendence of a Naval Store Officer and Superintendent.

Three or four years ago what is now the dockyard residential area was covered with jungle and the only really cleared space was the actual Yard itself. The commencement of Naval, Military and Air Force works has greatly changed the appearance of Trincomalee and its neighbourhood. The clearing of jungle, the erection of buildings, the gradual increase in numbers of the European population and the great influx of native labour on account of the works now in progress have all added to the importance of Trincomalee. The place is expanding rapidly, and it has been most

eighteen

without
knowing, upon both
the country
countries
in the tropics and
the failure of the
monsoons one year
will lead to
an under nourished
stand up
against the ordinary
easily,
and still further reduce the

The inhabitants of Ceylon
from Southern
India are generally of poor
it is probable that nearly every
one of them has at some
suffered from malaria and
ankylostomiasis diseases
indicated in an isolated and
controlled population but
on account of reinfection, be
prevented in the general population

The epidemic of malaria
which some 100 000 people
died, lessened the world's attention on Ceylon but inasmuch as it
stimulated the people's interest in this disease one need not perhaps
consider it quite such an unfortunate disaster after all Its causation which was
closely connected with the irregularity of the monsoons in 1934 will not
be gone into here but a few remarks must be made on the monsoons
experienced in Ceylon in order that the conditions under which the
various works at Trincomalee are being carried out, may be more readily
understood

The Island experiences a S W and a N E monsoon during the summer
and winter months respectively, and the mountainous nature of the South-
West portion of Ceylon and the comparative flatness of the North East
account for the fact that the former experiences rain in both monsoons
whilst the north eastern region receives it only during the N E monsoon
At Trincomalee (on the east coast) the dry S W monsoon blows from May
until September and during this period all surface water tends to dry up
From October to February there is a considerable amount of rain due to
the N E monsoon and breeding of mosquitoes occurs in all stagnant and
slowly running water in ponds tins coconut shells hoofmarks, and so
on The flooding effect of the rainfall during the wet season however
diminishes to some extent the large amount of breeding which would
otherwise take place in lighter rains and one finds that the most
dangerous time of year is at the end of the rainy season in March and
April when there is still a considerable quantity of surface water lying
about in undiscovered places and the washing out effect of the heavy rains
is no longer operable There is, in consequence, always a rise in the
Fever attendances at the Ceylon Government Hospitals and Dispensaries
during and following the rains

Tables I to IV give some indication of the health of the natives in

Trincomalee Town These tables have been based on the population shown in the 1931 census, and no correction has been made in connection with the great increase of population during 1936 and 1937 following the influx of labour due to Naval Military and Air Force works It would appear that no great adverse effect on the health of the inhabitants of Trincomalee Town has been caused by this influx of labour but it must be remembered that one cannot judge the health of a district solely on its death rates Morbidity is no less important than mortality from the public health point of view, and an overcrowded town must obviously have a potentially bad effect on the health of its inhabitants

TABLE I —BIRTHS PER 1,000 POPULATION IN TRINCOMALEE TOWN

	1931	1932	1933	1934	1935	1936
Births	343	365	384	393	396	418
Birth rate	32 7	35 0	36 0	37 0	37 4	45 0

TABLE II DEATHS PER 1 000 POPULATION IN TRINCOMALEE TOWN

	1931	1932	1933	1934	1935	1936
Deaths	297	234	276	337	365	456
Death rate	28 4	23 1	26 4	35 0	52 4	42 0

TABLE III —INFANT DEATHS PER 1 000 BIRTHS IN TRINCOMALEE TOWN

	1931	1932	1933	1934	1935	1936
Infant deaths	71	67	87	87	80	87
Births	343	386	384	393	396	373
Infant death rate	207 0	173 5	226 6	221 3	314 1	232 0

TABLE IV —MATERNAL MORTALITY PER 1 000 BIRTHS

	1931	1932	1933	1934	1935	1936
Maternal deaths	8	8	13	1	15	10
Births	344	386	384	393	396	15
Maternal mortality rate	23 0	20 0	34 0	23 0	10 0	45 7

The number of natives employed by the Admiralty fluctuated considerably during the course of 1937 and Table 5 shows the total number employed each month on Admiralty property

TABLE V —LABOUR FORCE 1937

	Jan	Feb	March	April	May	June	July	Aug	Sept	Oct	Nov	Dec
China Bay	1 006	1 025	1,109	1 164	971	118	83	85	201	188	183	151
Chinaveadi	4 888	4 919	4 927	4 377	4 844	2 815	2 810	2 807	2 860	2 109	2 472	2 324
Dockyard	887	851	774	876	884	850	743	770	145	96	680	643
Total	6 783	6 795	6 810	7 017	6 793	4 148	1 636	3 661	3 186	3 713	1 135	3 198

Since the Admiralty Military and Air Force works were begun, Trincomalee has acted as a goal towards which thousands of natives have gravitated from all parts of Ceylon and Southern India Some have brought with them their wives and families and this has resulted in a good deal of overcrowding in the native town Some idea of the increase in population in recent years may be gathered from Table VI, in which the figures for 1921 and 1931 are census returns, while the remainder are

[illegible] though only approximately correct, are sufficient [illegible] for all practical purposes

TABLE VI. POPULATION OF TRINCOMALEE TOWN AND DISTRICT

	1921	1931	1936
Trincomalee Town	9,414	10,160	20,600 approx.
Trincomalee District	34,112	37,402	47,026

The housing of the Admiralty labour force has provided difficulties. Unlike Singapore there is no female labour employed at Trincomalee and no facilities are provided for the housing of wives and families on Admiralty land. Those natives who have not found accommodation in the town have either made their homes in the neighbouring villages, which are for the most part small and insanitary or have themselves erected clusters of huts on the edge of the jungle which may be said to possess no sanitary arrangements of any sort. These Squatters are not on Admiralty ground, and we have no control over them.

Coolie lines to accommodate seven hundred men have been erected but they are never fully occupied. Once his work is over for the day the native labourer prefers to travel some distance to his family rather than make use of the accommodation provided for him. The natives who sleep away from their work are therefore exposed to malarial and unhygienic conditions, entirely out of our control, and they will continually be re-infected whatever courses of treatment they may be made to undergo. This has really been the great problem at Trincomalee.

Much work of an anti-malarial nature has been carried out during the past two years. A survey carried out at the beginning of 1936 showed that anopheline mosquitoes were breeding all over Admiralty property, which is somewhat scattered and intersected by Ceylon Government land. For instance a distance of eight miles separates the dockyard from the oil depôt at Chinnavadi, and this only serves to make the problem of control more difficult. However as the results of jungle clearing, draining swamps, constructing drains oiling, &c. there is now no breeding on Admiralty or Air Force lands.

It is very different in the case of culicine mosquitoes. These breed in the neighbourhood of houses, in tins, garden tanks, roof gutters, tree holes, flower vases and so on and it is extraordinarily difficult to make residents realise that it is up to them to prevent such breeding from occurring. In spite of the pamphlets dealing with the subject, hard words, and yet harder words, there is still a great deal of dengue in Trincomalee. There is of course a considerable amount of malaria but people are being infected in the native town and in surrounding neighbourhoods and not except very rarely on Service land.

The water supply at Trincomalee is obtained from wells of which there are over a thousand in the native town. Though the majority of Admiralty wells are covered and fitted with pumps nearly all those in the

town are open, and built [illegible] native method of drawing water is to lower a [illegible] end of a rope and little imagination is req[illegible] danger to health that this involves. I ran an [illegible] wells are controlled by stocking them with [illegible] this method has been tried with success in two [illegible] wells.

At the beginning of [illegible] method of disposing of sewage was replaced [illegible] by water carriage system. In the native t[illegible] collection of latrine buckets and dustbins th[illegible] approved sites.

There are therefore [illegible] of various kinds might originate [illegible] a stretch of level ground s[illegible] quarter of



[illegible]

a mile in breadth [illegible] native town is [illegible] area. This area [illegible] dangerous [illegible] very good [illegible] swamp in rainy weather and provided a perfect [illegible] mosquitoes. Only [illegible] a few [illegible] certain number of [illegible] weep-holes [illegible] into a [illegible].

Arrangements for [illegible] native labour force [illegible] during the past eighteen months. In the Chinese [illegible] labour force is [illegible] native hospital of fifty beds. It is staffed by [illegible] under the [illegible] and serves all Admiralty [illegible]. The various buildings are constructed of matted palm [illegible] on a wooden framing, and lined internally with [illegible]. This type of

...n is quite satisfactory. In all the ... patients are kept, but the cadjan huts for ... lines take well ... The principal buildings consist of two main wards



A Hospital Ward

each containing twenty ... beds, an administrative block containing a laboratory, dispensary, store, mortuary, and operating theatre and a small two bed isolation ward. We now have two canvas and bamboo huts ... those



... gallows

were badly needed ... during the early days when the only means of getting a cot case to ... 150 miles away was by train, which took twelve hours to do the journey.

As the oil depot is right away from the dockyard where, besides Europeans, a large number of ... are employed, it was necessary to open

up [illegible] dockyard ships. Here all [illegible] and their families [illegible] and native employees [illegible] the clerical work which has gradually increased [illegible] of the department. Complete records of all cases seen, new entries examined etc. are now being kept in addition to all the futile and not so [illegible] correspondence which seems to be attracted to a dockyard [illegible] in the tropics. It is hoped eventually that a permanent dockyard [illegible] will be erected at Trincomalee.

Tables VII and VIII give some idea of the number of outpatients who received treatment at the first 3 huts and the Asiatic Hospital in 1937 at (*a*) the Chinnavalai oil depot and (*b*) another Admiralty area known as China Bay. No accurate figures are available for Europeans and natives working in the Dockyard for 1937 but these were also fairly large.

TABLE VII. SHOWING MONTHLY [illegible] FOR MALE AND OUTPATIENT ATTENDANCES AT CHINNAVALAI OIL DEPOT AND FIRST AID HUTS, 1937.

Month	Labourers	Others and Europeans	Artificially cases	Total
January	1 369	748	5 193	5 310
February	1 919	592	5 [illegible]	6 680
March	1 927	1 315	10 [illegible]	12 482
April	3 [illegible]	1 341	8 [illegible]	9 599
May	4 [illegible]	1 764	6 [illegible]	8 782
June	[illegible]	1 [illegible]	[illegible]	6 657
July	2 [illegible]	[illegible]	2 854	4,147
August	80[illegible]	1 [illegible]	3 [illegible]	4 401
September	866	1 [illegible]	2 [illegible]	4 [illegible]
October	2 [illegible]	1 [illegible]	3 [illegible]	4 [illegible]
November	2 [illegible]	1 [illegible]	2 [illegible]	3 [illegible]
December	2 [illegible]	1 [illegible]	[illegible]	3 [illegible]

* The China Bay [illegible] was closed down in the middle of September when the Asiatic Hospital was opened. Figures for the last months of the year therefore include hospital [illegible].

TABLE VIII. SHOWING MONTHLY [illegible] MALE AND OUTPATIENT ATTENDANCES AT CHINA BAY FIRST AID POST, 1937.

Month	Labourers	Artificers
January	1 001	3 [illegible]
February	1 025	413
March	1,109	1 [illegible]
April	1 161	4 [illegible]
May	971	3 [illegible]
June	418	1,[illegible]
July	83	[illegible]
August	[illegible]	106
September	301	332
October	788	713
November	161	886
December	151	971

[illegible] medical officer has recently been appointed to Trincomalee [illegible] that is now (June 1938) being made to provide the necessary [illegible] for undertaking major surgical operations locally. As far as the [illegible] are concerned this will be possible quite soon but the question [illegible] dealing with Europeans is not so simple. The question of post operative nursing has to be taken into consideration but no doubt things will eventually work out satisfactorily.

Trincomalee is expanding rapidly [illegible] place and [illegible] in subordinate offices [illegible] difficult and expensive to get away [illegible] being made to remedy this state of affairs [illegible]



A [illegible]

importance [illegible] [illegible] [illegible] [illegible] [illegible] enced at Trincomalee This [illegible] with the monotonous [illegible] S W wind during the [illegible] and the comparative [illegible] of social

TABLE IX—S[illegible] R[illegible] [illegible] BAR MONTHLY MAXIMUM AND MI[illegible] AT [illegible]

	[illegible]	[illegible]
	M	[illegible]
January	6	5
February	[illegible]	[illegible]
March	[illegible]	[illegible]
April	8	[illegible]
May	[illegible]	[illegible]
June	[illegible]	[illegible]
July	[illegible]	[illegible]
August	[illegible]	[illegible]
September	[illegible]	[illegible]
October	[illegible]	[illegible]
November	[illegible]	[illegible]
December	[illegible]	[illegible]

amenities necessitates [illegible] at least once a year if one's mental and physical health [illegible] There are however certain attractions at Trincomalee There is good shooting and plenty of tennis—a cinema (two nights a week) and good sailing in the harbour except during the S W monsoon But there is a regrettable lack of non mental attractions

r

Clinical Notes

[illegible] CASES, ILLUSTRATING SOME OF THE [illegible] CONCUSSION

[illegible] Surgeon Commander J G Holmes M B R N

[illegible] cases are being briefly recorded in the Journal [illegible] of the [illegible] of the sequelæ of concussion The days gone by when the [illegible] defective memory, and emotional upsets, were frequently ascribed to [illegible] or hysteria and rightly dismissed as an appreciation of the case But the past fifteen years Trotter and Symonds, Jefferson Russell and others [illegible] called attention to the organic nature of some of those sequelæ and the [illegible] of the cerebral contusion is now fairly well recognised

All the cases described in this short series have been invalided from the Service they were considered to be suffering from persistent cerebral contusion

Case I

A man aged 20 was involved in a drunken brawl in which he was either struck or kicked on the back of the head At first he could not be roused but later he became very irritable and violent He was unconscious for eighteen hours There was a contusion on the occiput but no other clinical or physical sign There was no radiological evidence of fracture of the skull In two days he appeared normal and on the twelfth day he went to duty During the following month it was noticed that the standard of his work deteriorated Before the accident he was reputed to be keen and efficient afterwards he seemed to lose all interest in the Service He became quarrelsome with his messmates and relations In addition he was stated to have fainted without warning on five occasions though no reliable witness could give an account of the nature of the faint He was readmitted to hospital a month after his discharge He had no physical complaints such as headache or giddiness His pulse was 72 and blood pressure 130/66 Physical examination was negative No fits or faints were observed in hospital He did his work but always looked miserable and depressed

Case II

A man, aged 22, was struck on the head by a winch handle and was rendered unconscious it could not be ascertained exactly for how long There was no radiological evidence of fracture of the skull He was in hospital for fourteen days and subsequently absent from work for six months because of generalized headaches which gradually improved Later on return to work, he found that headaches were brought on by reading bending down and in any hot or stuffy atmosphere such as an engine room or caserne Physical examination was negative The eyes were normal Blood pressure 104/44

Case III

A man, aged 32 was involved in a motor smash, and was unconscious for twenty hours There was no radiological evidence of fracture of the skull He was three weeks in hospital and during the following six months was quite fit Then one day, while playing squash he fainted and was unconscious for about half an hour Two months later without any warning he had an epileptiform fit followed by tonic and clonic convulsions The tongue was not bitten nor was urine voided during the fit He was admitted to hospital for investigation His blood pressure was 104/62 Physical examination negative It was noted that

[illegible] del observ [illegible] again adm [illegible] that th [illegible] tr [illegible] must be [illegible] dem anything [illegible] native

It should be [illegible] were of th Jacksonian typ [illegible]

Case I

A man aged [illegible] and was unconsc [illegible] was not [illegible] headaches and occasional g [illegible] the next three months [illegible] or read for examinations [illegible] Physical exam [illegible] radiological exam [illegible] negative He had a negat [illegible] hospital he had a fall [illegible] his face

Case II

A man aged 3[illegible] for an unknown p [illegible] became much relieved [illegible] sad restless Since coming [illegible] smash Following [illegible] couple of occasions [illegible] should have [illegible] some seconds after [illegible] evidence of fracture of skull [illegible]

These cases were all under the [illegible] 1938

Case I was admitted [illegible] Hospital Haslar but the other cases were treated at [illegible]

REFERENCE

Brain and Strain Recent Advances in Neurology Third Edition [illegible]

CONCUSSION AND CONTUSION

By Surgeon Lieutenant Commander T H SIMPSON M.B. [illegible] R.N.V.R.

Case I—A Mild Case

M N C aged 24. A normally minded athlete young man [illegible] the following history Four months previously during extreme [illegible] struck by a gun on his right occiput and threw him [illegible] well. Retrograde amnesia for fifteen seconds unconscious for half an hour incapable of intelligent speech for two hours no vomiting

Treated in hospital lying flat for 2 days and given [illegible] sedatives. Had extreme pain on slight movement of eyes to right or left At the end of forty eight hours headache abated and therapeutic measures [illegible] to some degree Headache reappeared on sixth day but he continued his training Discharged

On returning to work he complained of severe headache and giddiness on rising and sudden movement especially when turning the eyes to right or left These symptoms gradually abated

Four months later he complained of slight headache in the morning and that his capacity for alcohol had been reduced by half He was able to do his work

[illegible] Babinski positive. [illegible] flows mild to [illegible] negative each mor[illegible] later he reports [illegible] these measures had [illegible] ered that he was completely free from symptoms. [illegible] ve

Treatment.—A case of this kind [illegible] vertical treatment [illegible] of the patient. [illegible] Babinski test would [illegible] time prevented [illegible] the headache and [illegible] hospital.

Diagnosis: Concussion and contusion.

CASE II.—A CASE OF MODERATE [illegible]

M. B., aged 19. An intelligent quick young man [illegible] concussed at a school [illegible] three years previously [illegible] while playing football [illegible] suffered from [illegible] kept in bed for three days and suffered [illegible] on June 1932 after having had 7 pints of [illegible] He had [illegible] broken [illegible] take his head. He was [illegible] three minutes [illegible] pupils dilated unconscious for five minutes [illegible] and was sick. He was taken to [illegible] 5 p.m. of calomel. He remembered nothing till 10 p.m. next day [illegible] after the accident. He had retrograde [illegible] hour [illegible] later he saw his mother [illegible] and make [illegible] and then went to sleep. He took [illegible] attempt at meals and vomited.

On examination his pulse was 52, his temperature 98° F., and his blood pressure 115/75. Pupillary and central nervous system reactions were normal. On the second day he was propped up and took 2 oz. per rectum magnesium sulphate. The headache was less, but was progressively less during the second and third day, and the blood pressure fell to 130/60. The temperature was subnormal. Headache was still present on the fifth day, but had disappeared by the seventh day, when headshaking 1 produced dizziness. On the tenth day there was no headache and headshaking 1 was negative. He was allowed the use of his wireless set. On the twelfth day he stood out of bed. Head shaking 1 produced dizziness. He was allowed to read. On the fourteenth day he had no symptoms. Headshaking 2 was negative, headshaking 3 was positive. On the twenty first day headshaking 4 became negative.

On the twenty eighth day he was discharged. There were no symptoms and physical examination revealed no abnormalities. During the next month he rested in bed very quietly. Two and a half months later he played in a tennis tournament in which he reached the finals, playing against people of county standard. But when he attempted concentrated work he felt drowsy. The accident occurred after the May examination which he had passed without appreciable effort. One year after the accident he failed in his tripos in spite of having worked hard. He stated that his memory was much more adversely affected for Latin prose than for translation. At the end of his third year he easily obtained First Class Honours in the Classical ordinary degree. Thus, although his athletic capabilities were in no way affected by the accident his mental capacity did not return to normal for between one and two years after the accident.

Comment.—This is a case of definite concussion and contusion, who exhibited traumatic stupor. The case is of special interest because the intellectual functions were affected much more than those requiring accurate co-ordinated movement. There had been no direct blow on the head. He was seen four years after the accident, and was normal in all respects.

[illegible]

[illegible] April 24 An [illegible] [illegible] type In March, 1930 [illegible] [illegible] accident He sustained a laceration of the face extending [illegible] [illegible] the side of the nose to the left angle of the mouth An [illegible] fracture of the frontal bone The left eye was proptosed He was [illegible] three days and had retrograde amnesia for about four hours He was [illegible] in hospital for 10 days attention being given chiefly to his surgical [illegible] injury to the brain being lost sight of In April 1935 he returned to C [illegible] complaining of violent headache photophobia and complete inability to [illegible] concentrated work

There was a well healed scar in the area described the left eye was proptosed slightly left vision was $\frac{6}{9}$ right vision was normal The eyes reacted normally to light and accommodation There was diplopia on extreme deviation of the left eye there was no nystagmus There was no other abnormality in the central nervous system Pulse 48 Blood pressure 172/74 Headshaking 3 produced giddiness and headache and headshaking 4 produced terrific headache and "nearly sent him silly"

Treatment in bed sitting up combined with purgatives and medinal, gave him some relief In spite of advice he married out this treatment for one week only and then spent a day on the river in the hot sun A complete return of the symptoms returned Headshaking 3 and 4 were still strongly positive He was completely incapable of concentrated work and missed his examination

During the summer vacation he rested slept propped up had two or three fluid actions of the bowel, and remained on a restricted fluid intake

Re examined in October 1935 the proptosis had subsided He was able to do good work for two or three hours at a stretch There was no abnormality in the central nervous system Pulse 72 Blood pressure 140/74 Headshaking was negative

On re examination in May 1936, he was absolutely fit and capable of concentrated work for a normal period

Comment.—A case of very serious concussion where the surgical treatment eclipsed the necessity for medical treatment of his cerebral condition His four months disability after the accident could probably have been averted if he had been kept in bed in hospital for a further period of fourteen days In spite of the severity of his injury and the lack of early treatment he made an ultimate complete recovery by the method of dehydration and rest

Headshaking 1 denotes shaking the head in bed and shaking the head

Headshaking 2 denotes shaking the head down without shaking it and standing up again

Headshaking 3 denotes shaking and [illegible] [illegible] shaking the head

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A CASE OF ADIE'S SYNDROME

By Surgeon Commander [illegible] KELVIN MILN

R J C, painter, aged 53 on examination for re engagement in May 1918 was found fit in all respects except for the absence of certain tendon reflexes and the presence of abnormal pupil reactions The latter were not of the classical Argyll Robertson type and there were no signs of Parkinson's disease so that there was some doubt as to the diagnosis which appeared to rest between post encephalitis lethargica and neurosyphilis

The case was referred to Dr [illegible] Gerrish Caughley of Auckland New Zealand who interpreted it as one of Adie's Syndrome

The detailed ophthalmic findings are as follows —

[illegible] have good [illegible]

[illegible] vergence the p[illegible] The pup[illegible] This illust[illegible]

[illegible] at on of [illegible] mmodation [illegible] here [illegible] The pupils [illegible] that [illegible] apparent the pupil [illegible] closing reaction [illegible]

Tendon Reflexes [illegible] reflexes being [illegible] The left knee jerk and [illegible]

There are no [illegible] both in the blood and cer[illegible]

Dr. W. J. Adie first de[illegible] report in the *British* [illegible] and in *Brain*, 1932, vol. l[illegible] neurosyphilis with wh[illegible] it as a clinical entity [illegible] areflexia. He described [illegible] case, and an incomplete for[illegible] to light and showed that [illegible] the common form [illegible]

The condition can be distinguished [illegible] the absence of miosis [illegible] and the contraction of [illegible] neurosyphilitic subject [illegible] history of the [illegible]

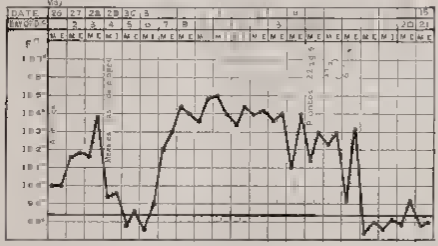
Dr. Adie stated that [illegible] discomfort owing [illegible] to dysfunction of [illegible]

PRONTOSIL [illegible]

By [illegible]

Whilst it is recognised [illegible] every day find [illegible] that it will be of some [illegible] is dramatic [illegible] satisfactory termination [illegible] being the Summer Term of [illegible]

M. B., a Naval cadet, [illegible] on M[illegible] complaining of a cold, cough [illegible] present [illegible] month and it was [illegible] epidemic in the College at [illegible] appeared the disease was [illegible]



A most unhealthy and purulent looking secretion covered the patient's posterior pharyngeal wall. The physical signs showed gradual involvement of the whole of the left lung. One examination possibly suggested faint signs of consolidation but the patient was obviously going slowly and surely downhill. On June 3rd it is the ninth day of the pneumococcus infection the position was critical and there was still no real evidence of improvement in the physical signs to encourage one. At this time did the boy produce a very small mid-examination of the throat did not reveal the presence of the tubercle bacillus. The patient was dying and one summed up the situation as follows

(1) The condition was acute tuberculous consumption by the measles and the prognosis was hopeless.

(2) The consumption was due to the pneumococcus and might still improve if the patient could stay the course.

(3) The condition was symptomatic or mixed and possibly secondary to the pharyngeal condition.

It was decided that protosil was indicated as a condition in which the drug would in no way influence the causative condition. Strong, but healthy and in condition, it should have a definite effect on overcoming the infection. Accordingly on the morning of June 4 a course of one tablet (5½ grs.) three times a day was commenced. On the evening of June 10 Dr. Lester of Dunmouth came over to

the College to give a second opinion on the patient. He confirmed the diagnosis and also put the case into one of the categories mentioned above. He was inclined to favour tuberculosis as the cause of the condition and offered very little hope of recovery. He agreed that prontosil was the only line of treatment which might influence the course of the case, and suggested that as it was literally a matter of life and death, the amount being given of that drug should be increased to three tablets three times a day, a dose far more heroic than was being employed. The following day there appeared to be a slight improvement to the morning this had disappeared by the evening, but on the morning of the 12th the change was incredible. The temperature was normal, the distress had disappeared, the throat was far cleaner, and a desperately sick boy was converted into a cheerful and hungry patient.

No relapse occurred, and the boy improved daily, returning this term (September 1938) a fine healthy specimen. The case appears to be worthy of note because it illustrates the large doses of prontosil which can be employed in treating a child of 14, and the dramatic manner in which this drug undoubtedly saved the patient's life.

A CASE OF TYPHUS FEVER

By Surgeon Lieutenant Commander T. J. CLAVE, M.R.C.S., R.N.

An able seaman, aged 37, twelve days after leaving Shanghai (where he has been ashore) reported sick in his ship April 28, 1938, with malaise, headache, pain in the limbs, and some cough; temperature 103°1, pulse 84, respirations 18. He continued much the same for four days, and was admitted to R.N.H. Hong Kong on May 2.

On admission he was found to have an inconspicuous rash in addition to the above symptoms and signs. This rash looked like measles, but was duskier and avoided the face. It was inconspicuous—the measles looked as though they had not yet developed. The chest showed signs of bronchitis only, but the X-ray showed a peculiar uniform congestion (not consolidation) of both lower lobes. The patient was noticed to be rather deaf, and somewhat stuporose. Physical signs in all other systems showed nil abnormal (e.g. no abdominal tenderness and no palpable spleen). Laboratory examinations revealed:—(1) Leucocytes 18,300 (Polys 73 per cent.—Lymphs 23 per cent. Monos 3 per cent.); no malarial parasites found. (2) urine normal. (3) sputum: fair number of staphylococci, other organisms scanty. (4) Widal reaction negative. (5) Kahn negative.

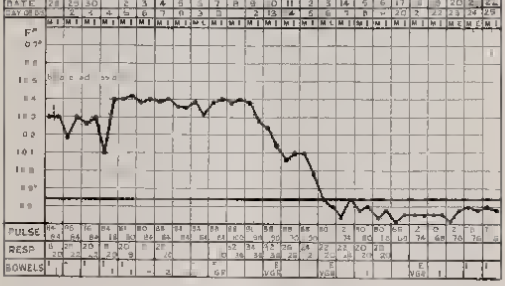
On entry this case was isolated and considered to be a possible case of measles, though the early symptoms, sustained temperature, and avoidance of the face by the rash were against it. He might have been a case of typhoid, the patient being assumed to have had some symptoms before reporting sick, but as the Widal reaction was negative though a rash was present it was necessary to think again.

The word typhoid means 'like typhus'—and as one was inclined over the proper diagnosis it was natural in a case like this to consider the latter. A Weil Felix reaction was accordingly done, the second day after admission, and showed no agglutination of 1–320 to *B. proteus* X19 (an agglutination of 1–100 is considered diagnostic of typhus). Two guinea pigs were also inoculated (X19 was the only proteus antigen in R.N.H.).

Pending another confirmatory Weil Felix test to see if the titre was mounting, the medical officer in charge of the Government Infectious Hospital was asked to see the case. He agreed with the diagnosis but asked to have the Weil Felix test repeated at the Government Bacteriological Institute. This was done and showed an agglutination of 1–400 to X19, 1–100 to the Warsaw strain, and

[illegible] It may be added that later Weil-[illegible] showed [illegible] to 1 500 and 1 640 to N/2

The case thus pursued a severe but uneventful course leaving [illegible] rapid fall of temperature about the twelfth day the typical chart is [illegible]



Convalescence was marked by a cerebral thrombosis that caused paralysis of the left leg, for about a week but which cleared up completely Both guinea pigs inoculated have showed the typical fever that occurs in these animals one was killed and a second guinea pig successfully infected from it

It is to be noted that typhus though occurring in Shanghai is rare in Hong Kong Though, doubtless other cases of typhus have occurred in the period, this was the first case proved by the Weil Felix reaction by the present government bacteriologist whose tenure of office at present exceeds seven years

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AN INSIDIOUS AMOEBIC LIVER ABSCESS

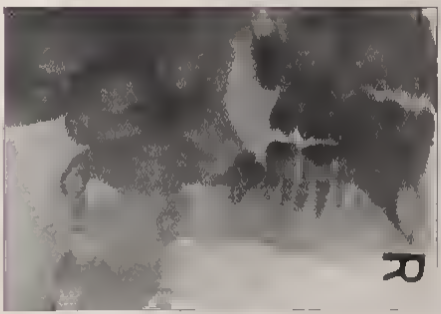
By Surgeon Lieutenant IAN MACDONALD M.B. M.R.C.P.Ed. R.N.

S. D. O. B., age 37, reported sick on May 7 1938 while his ship was on passage to Shanghai He complained of pain below the right costal margin which he had noticed thirty six hours before and which had gradually been getting worse He stated that he had not "been himself" for forty eight hours he had vague dyspeptic symptoms and occasional flatulence There was anorexia of twenty four hours duration Bowels were regular No nausea or vomiting and no complaint of pain in either shoulder region

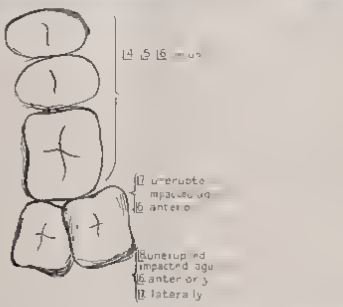
The pain was situated below the right costal margin and occasionally passed round to the right side It was continuous non colicky in nature and had increased gradually in intensity

Previous History—There was no history of previous pain or dyspepsia of any kind and he never had dysentery or noticeable looseness of the bowels

Examination—Patient was well built appeared healthy was overweight Temperature—103° F. pulse rate 100 Tongue thick dry brown fur Teeth carries and slight pyorrhœa Breath offensive Abdomen There was restriction







X rays were taken and 8 8 were found to
and impacted against the teeth immediately anterior to the
region the X ray showed a large calcified mass
an odontome The area was opened up under local
found that both 7 and 8 were present lying
against and 8 against 7 and

Both teeth were removed with some difficulty
due to the 7s being superimposed on one another

Since [illegible] dition has completely [illegible] four wisdom [illegible] pected in not co[illegible] eruptel [illegible] hat amounts to (?) triple [illegible] quadrant of [illegible] least an unusual occurrence

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[illegible] ON BLEPHARITIS

[illegible] PRESENT DEGREE [illegible]

INFLAM[illegible] eyelids are very common in all spheres of life and especially [illegible] where large numbers of persons are often compelled to [illegible]

Blepharitis [illegible] most of which may progress into the second. The conditions [illegible] are reddened and scales are seen among the lashes [illegible] The removal of these scales leaves reddened skin which [illegible] condition is called Squamous blepharitis. All [illegible] for its occurrence especially errors of refraction [illegible] rarely the cause of the trouble. Examination [illegible] lashes reveal at once a seborrhœa or dandruff, which [illegible] and treatment of the scalp will often effect [illegible] with local treatment. In speedy success [illegible] carried out with the utmost regularity [illegible]

[illegible] the eyelids [illegible] should be washed once a night by a person [illegible] soap should be used, and on alternate [illegible]

[illegible]

[illegible] rubbing the lids with [illegible] covered with a tepid [illegible] While the lids have been cleansed [illegible] simple must [illegible] A simple [illegible] from becoming [illegible]

[illegible] found that yellowish [illegible] eserine are taken [illegible] ulcerative blepharitis [illegible] with 2 per cent silver [illegible] [illegible] ointment may be [illegible] [illegible] should be cut [illegible] The patient must have his own [illegible]

[illegible] In such [illegible] without a change of [illegible]

[illegible] unhealthy condition [illegible] depth this until [illegible]

Correspondence.

PROPHYLAXIS IN MALARIA

[illegible]

SIR,—I have just returned from a three months [illegible] Accra. It is as Dakar and back to Simonstown via St. [illegible] this cruise I formed one or two opinions on the value [illegible] prophylaxis.

According to instructions laid down, the ships [illegible] leaving Capetown and up to thirteen days after [illegible] quinine daily, but in spite of this there were eighteen [illegible] to prophylactic quinine the living spaces were all [illegible] were used on the upper deck and the order that [illegible] rigorously applied.

It seems to me that the taking of quinine as a [illegible] to criticism. It does not prevent malaria and it [illegible] purposes. I am told that although it does not prevent [illegible] This is not in keeping with my findings, it only [illegible] states that the meaning point of a successful [illegible] ten days. Three of my cases occurred after the [illegible] two after eighteen days and one after thirty five. [illegible] the quinine masks the symptoms and signs of [illegible] to time a case at the start.

I found that the chief complaints were similar [illegible] ache, aching limbs and back, frontal headache, pain [illegible] most cases sleeplessness, loss of appetite and light [illegible] was there a genuine rigor and in none of them the [illegible] rigor, cold and sweating stages. All of them sweating [illegible] ature had reached its maximum. One case complicated [illegible] found to have profound anæmia with the blood full [illegible] three weeks after infection. It is the opinion of several [illegible] this mean that people who take their quinine religiously [illegible] liable to be infected with malaria as those who don't [illegible] touch it.

Manson Bahr quotes Yorke and Mitchie as stating [illegible] dose of 30 gr. daily of quinine is not sufficient to prevent [illegible]

In my impotuosity, I would suggest that a claim [illegible] quinine as a prophylactic measure and supplied to all [illegible] infected coast. I am convinced that the incidence of [illegible] be no higher than at present, and that with the [illegible] an earlier return to duty than is at present the case. [illegible] victims to the disease.

I am, Sir,

Yours, &c.

K. T. O'Connor.

S[illegible] [illegible]

TO THE EDITOR OF THE [illegible] OF TROPICAL MEDICINE AND HYGIENE.

SIR,—With regard to the prophylaxis of malaria [illegible] sulphate 5 gr. in solution is the best prophylactic. It should be [illegible] arriving in an infected area and be continued until two [illegible] of opinion that it is sometimes stopped too soon and it [illegible]

Reviews.

The [illegible] Surgery By R M [illegible] M C [illegible] Assistant Surgeon to St Mary's Hospital Lecturer on Operative Surgery in the Medical Tutor for University [illegible] St Mary's Hospital [illegible] and V L Pomfret M A M C [illegible] Surgeon to His Majesty's [illegible] Surgeon to Out Patients and Assistant Director of the Surgical Unit St Mary's Hospital &c First Edition 1938 London John Bale Sons & Danielsson Ltd 8 pp with 301 illustrations and [illegible] many in colour [illegible] throughout Published by [illegible] Price 30s net Postage 1d abroad 1s

The appearance of another textbook on Surgery calls for comment and is needed The problem is the dilemma of the authors to strike a balance between the [illegible] comprehension of students of two or more volumes and the short textbook [illegible] of comparatively small size the latter finds many to plead for it enthusiastic students with just sufficient time to read and remember [illegible] examination The student is all is not impossible [illegible] ways contain questions answerable by some symbols because of [illegible] authors

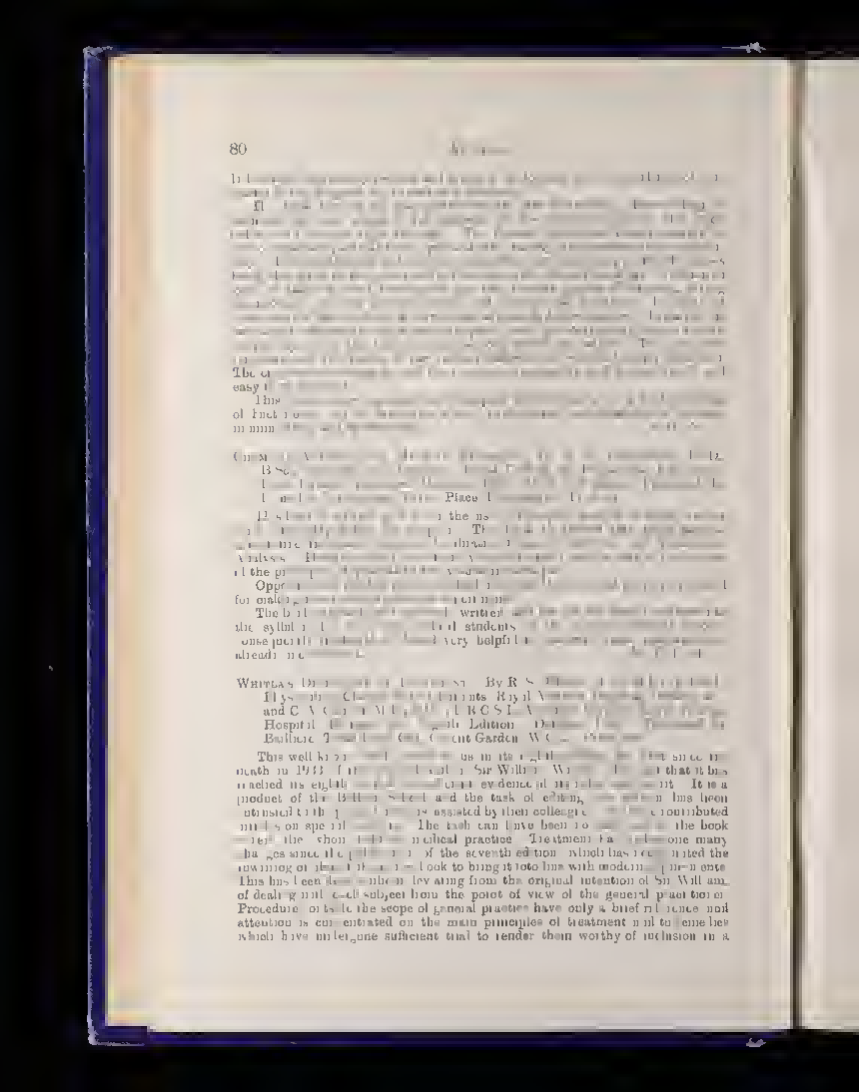
The more [illegible] the exposition of the views of their colleagues whose names appear in the list of contributors to deal with the more highly specialised subjects The present volume is built upon the fundamental principles of anatomy physiology and pathology as essential practice in the art of surgical teaching On such foundations all [illegible] can be built [illegible] men to think for themselves and stimulate their imagination and judgment on clinical grounds as opposed to that of subjecting every patient to routine laboratory investigations

In our opinion the authors have achieved their object and [illegible] personal to the production of this new textbook They have provided [illegible] and practitioners with the essential of modern surgery in as concise [illegible] possible and yet one of practical use to students studying for [illegible] tions Details of operations are not outlined in this textbook of [illegible] The outline of treatment is clearly stated but no details of technique [illegible] except in a few instances such as the [illegible] the urgent necessity for [illegible] which may arise with little or no warning Reference to special cases [illegible] as those usually dealt with in [illegible] short books The [illegible] by [illegible] many beautiful X ray [illegible] and [illegible] The printing paper and binding are excellent The [illegible] and [illegible] will have a large following and we therefore [illegible]

H H

Bacteriology for Medical Students and Practitioners By A D G [illegible] D M R C S Fellow of University College Oxford Professor of Bacteriology in the University of Oxford Second Edition 1938 Pp [illegible] figures Oxford University Press London Humphrey Milford [illegible] 6s net

This excellent little book which is primarily of pocket size essential theoretical [illegible] details of technique being [illegible] omitted It presents in a most readable yet concise form all the elements of modern bacteriology The first edition was published in 1933 and this one follows some five years after



WHITLA'S Dictionary of Medicine. By R. S. [illegible]
Illustrated. Crown 8vo. Pp. [illegible]. Adlard & Son and C. Vowell & Co., Ltd., 22 & 23, Bartholomew Close, E.C. 1913. Price [illegible] net.
Hospital Edition. Bound in Leather. Pp. [illegible]. Price [illegible] net.
Bailliere, Tindall & Cox, 8, Henrietta Street, Covent Garden, W.C. 1913.

This well known work [illegible] us in its [illegible] edition since its death in 1913. [illegible] Sir William Whitla [illegible] that it has reached its eighth [illegible] great evidence of its [illegible]. It is a product of the British School and the task of editing [illegible] has been admirably [illegible] assisted by their colleagues [illegible] contributed articles on special [illegible]. The task can have been [illegible] the book [illegible] the choice [illegible] practical practice. Treatment has [illegible] one many changes since the [illegible] of the seventh edition which has [illegible] the awaiting of the [illegible] look to bring it into line with modern [illegible] ente. This has been [illegible] seen leaving from the original intention of Sir William of dealing with each subject from the point of view of the general practitioner. Procedure of both the scope of general practice have only a brief reference attention is concentrated on the main principles of treatment and to remedies which have undergone sufficient trial to render them worthy of inclusion in a

[illegible] is the [illegible] to date [illegible] feel th[illegible] such a [illegible] mark of [illegible] treated [illegible] H L B

[illegible] STUDENTS AND R[illegible] [illegible] M A MD Cantab [illegible] Physician Rural [illegible] Dep[illegible] form in Dep[illegible] MCMII [illegible] 188 208 page Illustrations [illegible] 6s net

The need for a small book which [illegible] of minor surgical procedures is undoubted Large textbooks [illegible] manuals and it is often difficult to obtain [illegible] description of technical operations from any source without the [illegible] trouble The present volume has attempted to remedy [illegible] The authors state that it is for the [illegible] students and those recently qualified but in spite of this we find [illegible] the amount of information has been included which even [illegible] recalled the small years or who is qualified should be familiar It [illegible] unnecessary to describe a method of preparing the skin prior to [illegible] operation involving it such as giving a hypodermic injection or [illegible] with a rubber cap and to continue the rubber cap is [illegible] the needle and the required quantity is withdrawn Nevertheless the book [illegible] in considerable detail every ordinary operation that the physician may be called upon to perform Each section is well contained there leads to [illegible] repetition but saves the tiresome task of referring to other pages The description of every procedure includes technique apparatus required position of the patient the technique and finally the difficulties and complications with suggestions how they may be avoided

Methylated spirit is recommended for preparing the skin in nearly every instance either alone or with iodine The skin of many people is irritated by this spirit and it is not always good antiseptic Furthermore it is used for skin preparation for sensitivity tests false reactions will often occur In the description of lumbar puncture local anæsthesia is very lightly passed over it may occasionally be used say the authors We know of few physicians who are sufficiently skilled in this operation to be able to ignore local anæsthesia and of fewer patients who would willingly undergo a second puncture without it This criticism also applies to the description of giving intra peritoneal saline

The book is clearly written easily read and adequately illustrated with simple line drawings The authors conclude with a short section on the general care of the patient and some simple nursing procedures It contains much valuable advice on choosing problems with which the man in general practice is frequently faced and about which he is usually most inadequately trained W D G

ALCOHOL AND HUMAN LIFE By Courtenay C Weekes MRCS LRCP Second Edition Revised and Enlarged 1928 Pp viii + 456 Illustrations 20 London H K Lewis and Co Ltd Gower Street WC1 Price 6s net

This authoritative study of such an intensely important sociological problem is again characterized by the addition by a wealth of detail and statistics Dr Weekes has been most cautious and painstaking in the conduct of his comprehensive survey It embraces not only the physiological and physical manifestations but also the legal aspects and the position of alcohol as a factor

in this [illegible] last mentioned subject the question finds the author enthusiastically backed for he is well able to support his contentions regarding the [illegible] influence of alcohol on the expectation of life by references to his tables and curves

There is an interesting chapter on 'Alcohol in the Tropics' and in the Services' in which we [illegible] a well earned tribute to the late Dame Agnes Weston

It is perhaps as well to be forewarned that the work finds its chief place and any campaigner for total abstinence will find it invaluable W J T G

CARDIOVASCULAR DISEASES THEIR GENESIS AND PRACTICE By Terence East M A M D Oxon, F R C P [illegible] Physician and Physician in Charge of Cardiological Department [illegible] College Hospital Physician Woolwich War Memorial Hospital [illegible] Examiner in Pathology Conjoint Board and Radcliffe Travelling [illegible] Oxford University First Edition Pp 206, with 13 illustrations [illegible] H K Lewis and Co Ltd Gower Street W C 1 Price 10 6d net

The author of this excellent and most readable textbook has succeeded in giving us a concise yet detailed [illegible] to all the essentials in the diagnosis and treatment of cardiovascular disease It has none of the defects of being unduly condensed which the [illegible] in general practice so often entails

An early chapter is devoted to the provision of a suggested scheme for the routine physical examination of the heart, and concludes with a stressing of points of major importance in life assurance examinations

The chapter on failure of the coronary circulation is to be commended for its clarity, and there is much sound reasoning to support the author's plea for some amendment of our present nomenclature in this field

The whole subject matter of the book has been presented in a most refreshing way and not one of the twenty one chapters is in any way redundant Its subdivision is so skilfully carried out that ease of reference will ever prove an added inducement to preserve it in one's close proximity W J F G

TROPICAL DISEASES BULLETIN Vol 35 Supplement, November 1938 Medical and Sanitary Reports from British Colonies Protectorates and Dependencies for the Year 1936 Summarized by P Granville Edge Lecturer in the Department of Epidemiology and Vital Statistics London School of Hygiene and Tropical Medicine (University of London) Issued under the direction of the Bureau of Hygiene and Tropical Diseases London Pp 296 Price 7s 6d net

The eighth annual issue of this supplement in which the Medical and Sanitary Reports from British Colonies Protectorates and Dependencies for the year 1936 are ably summarized by P Granville Edge brings us once again a clear and concise picture of the state of the public health in over sixty territories widely scattered over the face of the globe The Director of Medical Services of Tanganyika Territory, Dr R R Scott, in his annual report quotes the following sentence The collection and accurate recording of vital statistics is thereby comparable to commercial bookkeeping without which no enterprise can hope to succeed And Mr Edge has evidently expended an immense amount of time and energy in condensing into one volume the essentials of the information contained in the annual returns under consideration

It may perhaps be remembered that in the corresponding supplement for 1935 reviewed in this Journal in January, 1938 Mr Granville Edge prefaced his summaries with an extremely interesting introductory essay on the incidence and distribution of malaria This year he has selected *human trypanosomiasis* for his

subject, and [illegible] a masterly synopsis of the [illegible] and geographical distribution of [illegible] disease of the preventive measures adopted to combat its spread, and the various remedial measures undertaken in connection with it.

He first remarks that so far as the British Colonial Empire is concerned it is only in certain tropical African territories that sleeping sickness occurs as an endemic disease and that the infection in these vast areas is very widely distributed, although showing at times a curiously localized incidence. In the West African territories, where upwards of a million cases of sickness (all causes) with nearly 6 000 deaths were treated as hospital patients roughly 5 per cent of the cases and 5 per cent of the deaths were due to sleeping sickness whereas in East African territories only about 0·1 per cent of the cases and 1·8 per cent of the deaths were caused by trypanosomiasis. In the Colony of the Gambia the most westerly of our West African possessions the disease has steadily increased during recent years and a definite increase in tsetse flies has been reported by travellers.

In 1923 only three cases of trypanosomiasis were recorded but in the year under review, over 40 per cent of in patient hospital cases and 30 per cent of deaths in hospitals were ascribed to this cause. The author remarks that these figures are sufficiently suggestive of the menace of the disease to health and life in the Gambia and yet they may tell but a part of the story for the up river population is so enlaced that it is difficult to say how many unrecorded cases exist.

What is particularly significant is the observation that a large number of patients who appear to have no symptoms referable to sleeping sickness, are found to have enlarged cervical lymphatic glands and to give positive gland punctures: these chronic low grade cases constitute a serious danger.

Nigeria is by far the largest of the West African Colonies. It has an area as big as the United Kingdom, France and Belgium combined and a total population of about twenty millions. In this territory sleeping sickness is a major public health problem and in the northern provinces the spread of the disease has reached such alarming proportions as to constitute a serious menace to the country. Over 60 000 sufferers were treated during the year and the special sleeping sickness teams examined 417 495 people of whom 47 650 or 11·4 per cent were found to be infected.

In East Africa Uganda accounts for the majority of cases—2 000 cases with 98 deaths.

In the Sudan the disease occurs only in the southern districts where both *Glossina palpalis* and *G. morsitans* are found.

In Tanganyika which has an area four times as large as the United Kingdom 536 cases were notified and 384 deaths. Sporadic cases were reported from Kenya and the disease appears to be endemic in Northern Rhodesia and in Nyasaland.

Under the heading of preventive measures the author touches on the methods adopted to combat the spread of the disease such as fly traps, bush and forest clearance, debushing strips along river banks and lake shores, control of population movements and the transfer of communities from infected to healthy zones. From the therapeutical point of view the only useful report is that from Nigeria. Here the standard treatment has been three 1 gramme doses of antrypol or Bayer 205 followed by five 2 gramme doses of trypersamide. At the time of diagnosis all patients were given a trial dose of 0·3 gramme of antrypol or Bayer 205 in an attempt to detect the occasional case of idiosyncrasy. This trial dose has been added on to the main course of treatment.

Research work on the trypanocidal properties of various new chemical compounds was continued.

The British compound neocryl, a complex aromatic arsenical substance

[redacted] the introduction [redacted] they may perhaps be [redacted] Empire Fascinating as [redacted] and distrust but for [redacted] its of peculiar interest [redacted] gh the pages, may [redacted] is example

[redacted] The first [redacted] outbreak occurred in an Indian [redacted] who was [redacted]

[redacted] ence should be [redacted] years 1935 and 1936 marked the [redacted] Jamine left in animals among [redacted] herds of the Royal Calpe Hunt for the first time in its history It is [redacted] that in some years all the hounds have been known to succumb Sandflies were suspected as the vectors of [redacted] while ticks fleas and lice were [redacted] under suspicion Systematic [redacted] entirely eliminated the pests

Malta A short paragraph deals with the occurrence of plague in April to November 1936 after the islands had been free from the disease for over a century Thirty five cases were recorded during this outbreak and ten deaths were ascribed to the infection

Hong Kong A serious outbreak of bacillary dysentery occurred in November the majority of the victims being European children In the first place, 12 European children became infected and 7 died and within the next eleven days a further 15 cases were recorded all but 4 of whom were European children under 10 years of age In 25 cases the causative organism was proved to be *Bact dysenteriæ* Shiga and in four *Bact dysenteriæ* Flexner in the remainder the organism was not identified but Shiga infection was strongly suspected Although a milk-borne infection was suspected the actual source of contamination was not discovered

Trinidad In this colony the campaign against the vampire Desmodus bats has been energetically pursued 3 623 bats were captured during the year and it is believed that a definite reduction in the Desmodus population has been effected Only four human cases of acute ascending transverse myelitis were recorded as against twenty one in the preceding year An important feature of the forms of transmission of rabies in vampires is their refractoriness to infection they can receive several lethal doses of rabies virus remain apparently healthy over prolonged periods and yet be capable of transmitting the infection

Dominica Of 1 506 registered live births 841 were illegitimate

Labuan This small native state about as large as Devonshire, lies on the north west coast of Borneo between North Borneo and Sarawak Dr W G [redacted] gives some most interesting information on certain native midwifery customs In Borneo the Malay houses are huts raised on piles built on mud flats which are [redacted] at high tide The rooms are large and well ventilated the chief source [redacted] through the floors, which are made of separated slats between which all [redacted] falls into the water and fresh air enters the room

The maternity nurse has more than once been startled by the sight of a [redacted] below the floor attracted by the smell of blood

The first Baby Show ever held there took place in December 500 babies, each accompanied by two adults were brought and in the words of the Report, the scene [redacted] but everyone went away pleased

F L H

[illegible] By [illegible] Edition [illegible] [illegible] Tindall and Cox [illegible]

[illegible] rland [illegible]

[illegible] chapter [illegible] Are Bald [illegible] first aid measures.

[illegible] information [illegible] where possible [illegible] though [illegible] [illegible]

[illegible] G [illegible]

[illegible] Charles R. Whitaker [illegible] Part II [illegible] Livingstone [illegible]

The [illegible] students [illegible] Mr. [illegible] Whitaker [illegible] essential to [illegible] To [illegible] anatomy [illegible] textbooks, [illegible] mental [illegible] essential, [illegible] [illegible]

Catalogue of Lewis's Medical and Scientific Lending Library. New Edition revised to the end of 1937. Part I: Authors and Titles. [illegible] Demy 8vo. London: H. K. Lewis and Co. Ltd., Gower Street, W.C.1. Price 16s. net (to Subscribers 8s.)

It is hardly necessary to introduce readers to Lewis's Lending Library, which has been established since 1848 to supply, mainly, the needs of the medical profession. The Library includes all works of any importance—English, American and foreign (when translated) in medicine and science generally. Every book in the Library in the latest revised edition.

In the preface the scope, the regulations in regard to and the terms of subscription to the Library are detailed.

The present volume, Part I, deals with "Authors and Titles." Part II, which is in active preparation and is expected to be ready early in 1939, will deal with the Library from the aspect of "Classified Index of Titles with Names of Authors who have written upon them." With this second volume, in addition to the present Part I, we feel that "Lewis's Library Catalogue" will form a useful work of reference to librarians as well as to readers. H. I. B.

HANDBOOK OF SANITARY LAW By B Burnett Ham, M D D P H Camb, late Commissioner of Public Health for the State of Queensland Australia, late Permanent Head of the Department of Public Health for the State of Victoria, Australia Chairman of the Board of Public Health, Victoria Australia Fraxine Accoucht with Certificate of Honour the Golding Bird Gold Medal and Scholarship for Sanitary Science Guy's Hospital London Published by H K Lewis and Co, Ltd Price 7s 6d

This handbook, of approximately 350 pages, is the twelfth edition of 'The Handbook of Sanitary Law' by the above author The first edition was published in 1899 and the eleventh in 1931 Since this date many new enactments have come into force these are all included also the most recent legislation and Food and Drug Acts of 1938

The book is replete with hard dry statements as all books on law must be but the text has been simplified and conciseness has been combined with accuracy All the essential features which were characterized in previous editions have been included in the present one

As public health is a subject which concerns all this book on Sanitary Law is one which may be read with advantage by all S B

THE PHARMACOLOGY AND THERAPEUTICS OF THE MATERIA MEDICA By Walter J Hilling M B Ch B Aberd Professor of Pharmacology and General Therapeutics Liverpool University Fifteenth Edition Revised and Reset January 1939 Pp x + 600 London Cassell and Co, Ltd Price 10s 6d

A book which reaches a fifth edition the last of which was reprinted twice, needs little recommendation as to its utility and popularity The author's object in the present students of medicine and medical men in general practice with up to date modern information upon the pharmacological actions methods of administration and relative therapeutical values of the drugs which are considered essential for the treatment of diseases or their symptoms This book is a concise modern compendium within the scope of the author's original intentions Much work has been reset throughout and the format has been increased somewhat in order to permit the use of larger type and a less crowded page The text has been brought thoroughly up to date Many new remedies and methods of treatment which have recently merited approval are described Amongst these are the gold salts in urinary infections retarded insulins in diabetes, sulphanilamide in streptococcal infections prostigmine and glycine in myasthenia gravis The newer antitoxin sera also have been incorporated

Those who desire an up to date compact 'Pharmacology and Therapeutics' cannot be recommended H F B

RHEUMATISM By Bertram S Nisse, M D Lond, M R C P Lond, Hon Physician British Red Cross Clinic for Rheumatism Pete Place 1938 Pp 160 John Bale Medical Publications Ltd, 85 Great Titchfield Street London W 1 Price 5s

This is a useful compendium of the various rheumatic diseases Nothing original is attempted and the author acknowledges his indebtedness to the reports on rheumatism published by committees of the Royal College of Physicians and the British Medical Association, as well as to the writings of Dr Matthew Hay

A valuable feature of the book, perhaps the most valuable is the attention paid to differential diagnosis in the early stages of these joint diseases Another useful feature is the method by which our therapeutic resources are set forth these should be of especial value to general practitioners

Part I is devoted to rheumatic fever Part II to fibrositis both general and

regional, brachial neuritis and sciatica. Part III is concerned with arthritis proper: rheumatoid arthritis of uncertain origin and infective origin, osteo-arthritis, menopausal arthritis, gout and regional arthritis.

The chapter on rheumatic fever is short, but comprehensive. The modern etiology is briefly touched upon; the clinical manifestations and differential diagnosis are adequately and simply set forth; and the remarks on treatment, both in the acute and subacute stages and during convalescence, are admirable.

The chapter on fibrositis includes a large field of practice, and the author has gone into the question of septic foci and metabolic disorders very thoroughly, and yet in the minimum of space. Under the heading of regional fibrositis: lumbago, both acute and chronic, and its simulators are very adequately dealt with, although one would like to have seen some reference to the psychogenic features which so frequently accompany this condition and prolong its course.

Sciatica is dealt with practically especially in the matter of differential diagnosis, and reference is made to the efficacy of short wave therapy in the acute stages, which has been so strongly advocated in recent publications.

Naturally, the greater part of the book has been devoted to rheumatoid arthritis and osteo-arthritis, regional arthritis and gout. The author is to be congratulated on reducing these thorny subjects to such reasonable dimensions. Where aetiology is uncertain, it is always difficult to write with confidence, and to be concise. In the matter of the treatment of rheumatoid arthritis, the blood sedimentation rate is mentioned as a sound indication of the patient's progress, especially under the gold treatment, and the physical measures which can be used with advantage are expounded shortly, but with precision. Indeed, from the multitude of treatments that have been advocated from time to time, the author has chosen the more efficacious with great skill and sense of proportion. Differential diagnosis is a valuable feature in this part of the volume.

The book is of practical use, and is produced with system, simplicity and brevity. Despite its compactness, it covers a tremendous field of everyday general practice, and it is recommended with every confidence to those so engaged.

J. G. D.

News of the Service.

ADMIRALTY ORDERS

2533.—Forms for use in connection with Medical Examination (Re-issue of Flint Air Arm Pursuant) Addition to Form M.1.

[M.D.1. 6.7.38.—18.10.1938.]

The following R.A.F. forms have been adopted as common forms and added to Form M.1 (Lists and Lists of Air Forces) under the Admiralty numbers shown:—

M.246. Hospital or Sick List Record Card.—R.A.F. Form 39.
M.247. Medical History Envelope.—R.A.F. Form 38.
M.248. Medical Examination (Special) of Flying Officer, Cadet or Other Flying Rank. Record Card.—R.A.F. Form 42.
M.249. Rough Notes for filling in M.248 or Special Medical Examination of Flying Officers etc. (Station Record).—R.A.F. Form 41.
M.250. Disabled Officer: Medical Board Record Card.—R.A.F. Form 48.
M.251. Board Report (of M.250).—R.A.F. Form 47.
M.253. Finding of Board on Special Medical Examination.—R.A.F. Form 8.
M.253. Receipt for Documents (Home).—R.A.F. Form 891.
M.254. Medical Board: Register of Invaliding.—R.A.F. Form 557.

[redacted]

2614 The Gilbert Blane Medal for Medical Officers 1939 Report
(M.D.C. (N.) 10/1939.)

[redacted]

2660.—Medical Officers' Journals: Use of Revised Forms.
(M.D.G. 0951/38.—P. 10/1938.)

[redacted]

2685 Form M.42—Abolition.
(Sha. 181/4/38. P. 10/1938.)

[redacted]

2688 China Station: Vaccination of Personnel.
(N. 6793/38. S.11/1938.)

[redacted]

[Amendment to Art. 111, Clause 1.]

[Amendment to Art. 114, Clause 1.]

2749 Eyesight Standards on Entry for Sick Berth Staff, Writers, Supply Ratings, Stewards and Cooks.
(M.D.G. 5/6/38. P. 10/1938.)

[redacted]

(*A.O. 1/39.*)

***2750.—Dental Standards—Temporary Modification.**
(M.D.G. 5193/38. P. 11/1938.)

[redacted]

(*A.O. 149/38.*)

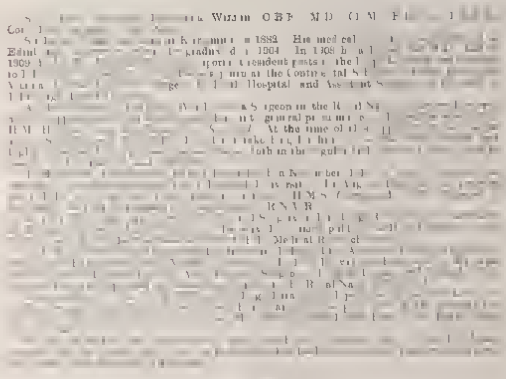
3036 Scale of [illegible] Service Afloat [illegible]

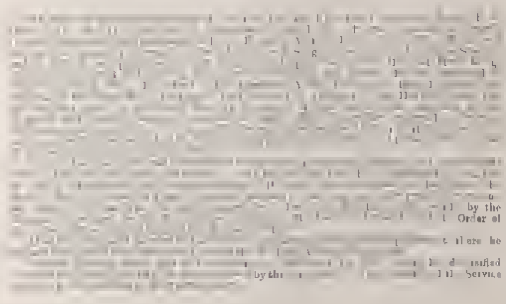
[illegible]

3041 Typing Personnel Medical Records

[illegible]

OBITUARY





HONOURS

[illegible] B E M D F R C P [illegible] H [illegible]
[illegible] l de publico servizi with red and blue [illegible]
[illegible] Order of [illegible] of the Chinese Republic
[illegible] Medical Unit at the University of [illegible]

RETIREMENTS

[illegible] M R C S L R C P [illegible] resigned Sept [illegible]
[illegible] Flt Lt [illegible] I M S S A Short Service [illegible]

[illegible] Capt [illegible] in M B Ch B with the rank of Surgeon-[illegible]
[illegible] Lt [illegible] R N V R Lieut September 1914
[illegible] Lt-Col W Cloak M R C S L R C P [illegible]

[illegible] L Marklin O B E M B placed on the retired list
Captain 0 4 Jan 19 1938
[illegible] Mottl M B placed on the retired list
[illegible] Captain November 2 1938
[illegible] Falconer F R C P C S placed on the retired list
[illegible] Surgeon Captain November 14 1938

PROMOTIONS

[illegible] ler L B Darragh M B B Ch [illegible]
[illegible] [illegible] L [illegible] Miles M B [illegible]
[illegible] A Miller D M B C H D D H [illegible]
[illegible] [illegible] Gilchrist M B B Ch [illegible]
[illegible] B Nicholson M B B S M R C [illegible] 1938
[illegible] Lieut [illegible] R C H C S [illegible]
[illegible] M B [illegible] Ch to be Surgeon [illegible]
[illegible] H B [illegible] [illegible]
[illegible] M B [illegible]
[illegible] S M R S [illegible] R C P [illegible]

[illegible] [illegible] [illegible] [illegible] [illegible]
[illegible] [illegible] [illegible] [illegible] [illegible]

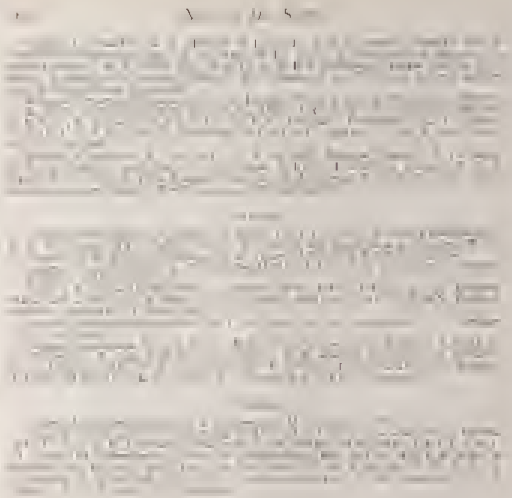
APPOINTMENTS

September

[illegible] Lieut M B B Ch to H M Dockyard [illegible]
[illegible] [illegible] [illegible] [illegible] [illegible]
[illegible] [illegible] [illegible] de L M Dublin M B [illegible] R M [illegible]

October

[illegible] [illegible] Wilson O B E M B [illegible] R N [illegible]
[illegible] [illegible] [illegible] [illegible] [illegible]



ENTRIES

TRANSFER TO PERMANENT LIST

WARDMASTERS

[illegible] to R.N. Hospital [illegible]

ROYAL NAVAL VOLUNTEER RESERVE

APPOINTMENTS (TRAINING)

SEPTEMBER

[illegible] W. J. [illegible] R.N. [illegible] Devonport. [illegible] H. M. Willoughby to R.N. Hospital [illegible] to [illegible] C. [illegible] R.N. Barracks, Portsmouth; J. B. W. [illegible]

[illegible] Surgeon Lieutenants H. W. Clegg to R.N. Hospital Chatham; W. F. [illegible] to R.N. Barracks, Chatham; R. L. J. [illegible] C. [illegible] McNab [illegible]

OCTOBER

Surgeon [illegible] Commanders H. A. Shelswell to R.N. Hospital Plymouth; C. [illegible] to R.N. Hospital [illegible]; H. P. Widdup, R.N. Hospital Portland.

Surgeon Lieutenants J. R. Singerton to R.N. Barracks Portsmouth; [illegible] Watson [illegible] Barracks, Portsmouth; M. D. Edwards to R.N. Barracks, Devonport; [illegible]

[illegible] Surgeon Lieutenants C. N. [illegible] R.N. Barracks, Portsmouth; [illegible] to R.N. Barracks, Portsmouth; [illegible]

NOVEMBER

Surgeon Lieutenant-Commander [illegible] Elliott transferred from [illegible] Division.

Surgeon Lieutenant H. T. Rylance to R.N. Hospital Chatham.

RETIREMENTS AND RESIGNATIONS

Surgeon Lieutenant-Commander R. H. [illegible] [illegible]

ENTRIES

Mr. W. J. [illegible], M.R.C.S., L.R.C.P. [illegible] Surgeon Lieutenant [illegible], Severn Division, August 10, 1938.

Mr. D. B. H. Dewar, M.B., Ch.B., M.R.C.S., L.R.C.P. [illegible] Surgeon Lieutenant, List I, Mersey Division, September 28, 1938.

Mr. H. [illegible] [illegible] Surgeon Lieutenant, List II, Sussex Division, [illegible] 1938.

Mr. J. F. Foulkes, M.B., Ch.B. [illegible] Surgeon Lieutenant [illegible] Mersey Division, October 4, 1938.

Mr. [illegible] Surgeon Lieutenant [illegible] Sussex Division, October 5, 1938.

Messrs. W. P. H. [illegible], M.B., Ch.B.; [illegible] M.B., [illegible] M.B., Ch.B.; A. J. Taylor, M.B., [illegible] Stirling, M.B. [illegible] Surgeon Lieutenants, List I, [illegible] 1938.

Mr. D. L. Ferguson, M.B., Ch.B. [illegible] Surgeon Lieutenant [illegible] Scottish Division, October [illegible] 1938.

Mr. C. [illegible] M.R.C.S., L.R.C.P. [illegible] Surgeon Lieutenant, List II, London Division, [illegible]

Mr. L. J. Tait, M.B. [illegible] Surgeon Lieutenant [illegible] October 14, 1938.

Messrs. J. B. [illegible] B.M., B.Ch., M.R.C.S., L.R.C.P., [illegible] M.R.C.S., L.R.C.P., and [illegible] B.M., B.Ch., M.R.C.S., L.R.C.P. [illegible] Surgeon Lieutenants, List II, London Division, October [illegible] 1938.

Messrs. G. [illegible] M.B. [illegible] M.B. [illegible] Surgeon Lieutenants, List II, [illegible] Division, [illegible]

Mr. D. J. C. Sutton, M.R.C.S., L.R.C.P. [illegible] Surgeon Lieutenant [illegible] Surrey Division, October 10, 1938.

Mr R A B Reglc M B Ch B entered as Probat[illegible]
I Scottish Division October 26 1938
Messrs I B Soullon M B Ch B A Lairn Blackman M[illegible]
Simpson M R C S L R C P entered as Probationary S[illegible]
Division November 3 1938
Messrs L H G Davis M R C S L R C P and A V [illegible]
entered as Probationary Surgeon Lieutenants for H[illegible]
Mr G Sheers M B B Ch entered as Probationary S[illegible]
Division November 18 1938

PROMOTIONS

Surgeon Lieutenant F C Johnson to be Surgeon Lieu[illegible]
1 August 1934 ✓
Probationary Surgeon Lieutenant A F M Harcon[illegible]

QUEEN ALEXANDRA'S ROYAL NAVAL NURSING SERVICE

APPOINTMENTS

Superintending Sister Miss K Baker to R N Hospital Hong Kong January 1939
Superintending Sister Miss M Goodrich to R N Hospital Haslar on expiration of Foreign Service leave
Nursing Sister Miss I K Pritchard to R N Hospital Hong Kong January 1939
Nursing Sister Miss B G Sykes to R N Hospital Chatham (on expiration of Foreign Service leave)
Nursing Sister Miss K A Finlay to R N Hospital Malta January 1939
Nursing Sister Miss K M Greenwood to R N Hospital Plymouth (on expiration of Foreign leave)

RESIGNATIONS

Nursing Sister Miss H I S Carter resigned August 28 1938

Notices.

[illegible] MEDICAL EXHIBITION

[illegible] 17 to 21 1915

The comprehensive [illegible] high quality pharmaceutical products [illegible] by Burroughs Wellcome & Co provided ample evidence of the progressive policy of the firm In all [illegible] to a range of established achievements of world wide repute the exhibit included several recent introductions particularly worthy of notice

Visitors were greatly interested in ' Tabloid ' Sulphonamide P (Sulphanilamide) which occupied a prominent position in the exhibit This new chemotherapeutic preparation for the oral treatment of hæmolytic streptococcal and other infections foreasses in importance as its therapeutic value gains greater recognition The specific chemotherapeutic effect of sulphanilamide on the hæmolytic streptococcus was demonstrated by means of an ingenious arrangement of illuminated photomicrographic transparencies said in addition the clinical use of the drug in such conditions as meningococcal pneumonia and in *B coli Ly ammonia* and gonococcal infections of the genito urinary tract was shown pictorially Sulphanilamide is also available as Wellcome Sulphonamide P for oral or parenteral administration

Several outstanding serological products were exhibited Exceptional interest attaches to " Wellcome Refined Diphtheria Antitoxin Globulins which combines the advantages of increased concentration (4 000 Ehrlich units or more per c c) with reduced protein content It should be noted that Wellcome Concentrated Diphtheria Antitoxin Globulins is still available Other recently introduced products shown in this section were Wellcome Whooping Cough Vaccine for administration as a prophylactic measure and ' Wellcome ' Tetanus Prophylactic Normol Toxoid

In addition to ' Wellcome ' Insulin which enjoys the distinction of being the first commercial product to be prepared with pure crystalline insulin a display of ' Wellcome ' Protamine Insulin (with Zinc) Suspension was shown

' Ryzamin B ' Rice Polishings Concentrate which presents the concentrated and purified vitamin containing fraction of rice polishings is a product of particular interest to practitioners It is a clear golden brown syrupy preparation with a consistently high vitamin B, content It provides a palatable and convenient means of supplementing the dietary intake of this important accessory food factor

Amongst digitalis preparations exceptional interest was taken in Digoxin, a pure stable crystallized glucoside isolated from the leaves of *Digitalis Lanata* The discovery of Digoxin which resulted from pioneer researches carried out by Burroughs Wellcome and Co , gave clinicians a digitalis product of stability and of known chemical composition which can be used with the utmost confidence in all conditions requiring digitalis therapy

' Wellcome ' Calcium Mandelate Compound is an extremely useful preparation for the treatment of urinary infections The product is issued as a suitably flavoured powder, free from the disagreeable taste associated with the mixed salts of sodium and ammonium

A new means of approach to the symptomatic treatment of asthma is available in ' Vaporole ' Solution of Adrenalin 1 200 This product is administered by oral inhalation in the treatment of asthma and it has been found that recurrent mild or moderately severe paroxysms can be satisfactorily relieved An apparatus which delivers a finely divided spray is required and no better choice for this purpose could be made than the ' Prolem ' Atomiser

[illegible]

ANNUAL MEETING OF THE ROYAL NAVAL MEDICAL CLUB

[illegible] Friday

NAVAL MEDICAL COMPASSIONATE FUND

[illegible]ly Meeting of the [illegible] 14, 1936, Surgeon [illegible] Nicholls G B E [illegible] Director-General of the Navy [illegible] cases were considered and £[illegible] voted to the applicants The following is a summary of the cases [illegible]

Daughter aged 38 of a surgeon who died in 1869 Her sole income is the Old Age Pension of 10s a week Voted £[illegible] Total amount received from the Naval Medical Compassionate Fund by applicants of the Officer at various periods £1,776 10s

Widow of a Surgeon Lieutenant Commander who died in 1934 Assistance required to meet the educational expenses of her two children Voted £30 [illegible] Total amount received from the Naval Medical Compassionate Fund at various periods £440

Widow of a Surgeon Captain who died in 1937 There are three children and [illegible] one of the family consists mainly of Widow's Pension and Compassionate [illegible] for the children Voted £60 jointly Total amount received from Naval Medical Compassionate Fund at various periods £120

[illegible] of a Surgeon Rear-Admiral who died in 1931 Assistance applied [illegible] to take up an appointment abroad Voted £15

KING EDWARD VII CONVALESCENT HOME FOR OFFICERS AT OSBORNE

[illegible] House East Cowes Isle of Wight formerly the island home of [illegible] by the late Queen Victoria was given to the nation by H M King [illegible] VII as a Convalescent Home for Officers

[illegible] which is situated on the Solent is an exceptionally beautiful [illegible] and has been admirably converted into a most delightful and comfortable [illegible] home for the reception of convalescent officers both serving and [illegible] the Royal Navy Royal Marines Army Royal Air Force Royal Indian [illegible] Army cadets of the Reserve Forces and Auxiliary Services and under certain [illegible] both serving and retired civil servants who owing to the nature of their [illegible] to serve abroad

[illegible] ing sisters masseuse [illegible] is employed and special facil[illegible] [illegible] ary massage and electrical and light treatment Medic[illegible] [illegible] is free, but in case of special nursing or other special measures or spec[illegible] [illegible] charge is made to cover the cost

M[illegible] [illegible] ic ray, ionization radiant heat ultra violet rays and all electro therapeutic [illegible] ments are provided at a charge normally of 2s 6d per week

The [illegible] ior of the home however, is such as to eliminate, as far as practicable [illegible] in spheres of Service Discipline and it combines all the advantages [illegible] first class convalescent home with those of a country club for those pa[illegible] who, in the later stages of convalescence, are able to take full advantage [illegible] recreational facilities provided

Osborne has its own private golf links within the grounds about three minutes walk of the house and the club, which is second to none on the island has its own resident professional There are also hard and grass tennis courts, a croquet lawn bowling green, badminton court miniature rifle range and also a private bathing beach on the estate During the season the 15 ton sloop *Osborne* is available daily for yachtsmen and during the winter months the Isle of Wight Foxhounds meet four days a week and foot beagles on two days Officers may hunt with the latter pack free of charge

Frequent entertainments, theatricals and dances are held throughout the year in the recreation room which is provided with a piano radio gramophone and cinema. A silence room is provided for those who desire quietude

Osborne also has its own motor car which conveys patients free of charge to and from the railway station The car is available for long and short runs at a small charge Garage accommodation is available for patients bringing their own cars

The charges are very reasonable and are as follows —

(*a*) Cadets and certain subordinate officers and officers on half pay, 4s 6d per day

(*b*) All other officers 6s per day

(*c*) Civil servants 10s per day

For further particulars and booklet apply to the House Governor, Osborne House, East Cowes, Isle of Wight

Telegraphic address "Convalescent Cowes Telephone No Cowes 201

Notice

[illegible] to Medical Officers to send [illegible] Original Papers on [illegible] travel personal experience &c Items of news [illegible] sent to the Naval Medical Service will be welcomed [illegible] short notes on Home and foreign stations

[illegible] of Original Contributions published in the JOURNAL OF THE [illegible] SERVICE will become the property of the Journal [illegible] unless the author declines when sending the [illegible] to retain the copyright to himself

[illegible] Births Marriages and Deaths are inserted free of charge [illegible] Obituaries

All Communications should reach the Editors on or before the 1st of the month preceding the date of issue Unless clearly written, they should be typed in order to avoid mistakes and they should be addressed to the Editors JOURNAL OF THE ROYAL NAVAL MEDICAL SERVICE Royal Naval Hospital Haslar Gosport

THE JOURNAL OF THE ROYAL NAVAL MEDICAL SERVICE is published [illegible] four numbers constituting one volume

The Subscription is 20s per annum (postage included), payable on 1st May 1st of each year but should a subscriber wish to commence at [illegible] number he may do so by payment at the rate of 5s per copy All subscriptions are payable in advance Single copies can be obtained [illegible] per copy Cheques or Postal Orders for Subscriptions should be [illegible] Lloyds Bank Ltd and be made payable to the Manager, JOURNAL OF THE ROYAL NAVAL MEDICAL SERVICE Royal Naval Hospital, Haslar Gosport to whom all communications relating to subscriptions &c, should be addressed

The payment of subscriptions by Banker's Order is recommended as it relieves the Subscriber of the necessity of forwarding a cheque each year and simplifies the keeping of accounts

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All typewritten matter for insertion in the advertisement sheets to be addressed

SPOTTISWOODE & CO 5 AND 57 FLEET STREET LONDON E C 4
Telephone City 4079

Journal
of the
Royal Naval Medical Service.

ERRATA

On p. 74 of the January number the authorship of a note on Unerupted and Impacted Molars was inadvertently ascribed to Surgeon Lieutenant Commander (D) D Hallam R N V R. *instead of* D Hallon which is the author's correct name

On p 57 'Methyl Chloride Intoxication by Gimlette the figure on line 7 *should read* −23°C *not* 23°C (re the boiling point of methyl chloride)

In 1827 he entered H M Service as an assistant surgeon After serving on the North American West Indian and African Stations he was promoted to Surgeon in 1836 Thereafter he served in the Channel Fleet and in the Convict Ship *Marquis of Hastings* He went once more to the Gold Coast for one commission and for the rest of his time in the Service he was appointed to Somerset House for duties in the Department of the Medical Director General

He was promoted to Deputy Inspector in 1851 and to Inspector General in the following year (the time of the Crimean War) This made no difference to his duties, for he was retained in the Office throughout his career Among papers from his pen are one on Climate and Diseases in the African Stores and Epidemics in Sierra Leone as well as the accompanying papers He was an expert epidemiologist and statistician and in his time and day the editor of the Statistical Report on the Health of the Navy

Bryson was promoted to be the Medical Director General of the Navy in 1861 He died at Barnes in December 1869

The *Lancet* in its obituary notice whilst paying tribute to his value as a public servant and as a statistician proceeded to these stringent observations He was neither an efficient nor a popular Director General An officer however zealous who has never done duty as a Deputy Inspector

Journal

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Articles.

ALEXANDER BRYSON CB FRS MD FRCP OHP

Communicated by Surgeon Lieutenant Commander S Hankinson RN

The writer of the accompanying accounts of Fever in H M S *Syphilis* and on the 'Diseases Prevalent among Captured Slaves' was educated at the Universities of Edinburgh and Glasgow He took his M D at the latter university and was admitted a member of the Faculty of Physicians and Surgeons of Glasgow

In 1827 he entered H M Service as an assistant surgeon After serving on the North American West Indian and African Stations he was promoted to Surgeon in 1836 Thereafter he served in the Channel Fleet and in the Convict Ship *Marquis of Hastings* He went once more to the Gold Coast for one commission and for the rest of his time in the Service he was appointed to Somerset House for duties in the Department of the Medical Director General

He was promoted to Deputy Inspector in 1851 and to Inspector General in the following year (the time of the Crimean War) This made no difference to his duties, for he was retained in the Office throughout his career Among papers from his pen are one on 'Climate and Diseases in the African States' and 'Epidemics in Sierra Leone' as well as the above mentioned papers He was an expert epidemiologist and statistician and in his time and day the editor of the Statistical Reports on the Health of the Navy

Bryson was promoted to be the Medical Director General of the Navy in 1864 He died at Barnes in December 1865

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or Inspector-General of Hospitals ought to be and for the future we are happy to know will be. He was unfitted for promotion to Flag rank and it is no disparagement to Dr Bryson's memory to say that in his education totally unfitted to cope with the many difficulties of a Director General's position. Statistical details of the Department had always the greatest interest for Bryson but a question affecting the position of a Medical Officer, in some dispute with a Commanding Officer, received from him no sympathy or attention and the members of the Naval Medical profession felt that they had no real chief to represent their interests at headquarters.

For the sin of having been found out in a false position Bryson was made to endure some smart rebuffs and a punishment of a very definite nature. He was ordered to vacate his office, but to continue performing its functions until the Board of Admiralty had found a suitable successor. Without further consultation with him they placed a Civilian Commission over his head to inquire into the working of the Branch. The question of the amount of his pension was still being debated at the Admiralty at the time of Bryson's death. Finally he was refused the knighthood which it is customary to bestow on the Medical Director-General of the Navy.

YELLOW FEVER

Fever in the *Sybille*

His vessel arrived at Sierra Leone from England on May 24, 1827. In the beginning of June four cases of remittent fever occurred on board one of the patients was the butcher who had been on shore killing bullocks, two others were smugglers serving for punishment and thirty of course had not come aboft the ship. Upon the fifth or sixth day of the disease yellow suffusion of the eyes and skin took place. The fourth case occurred to an officer after returning from a shooting excursion at Accra.

He remarked that "great attention has been paid to the health of the crew, drunkenness is promptly punished and the men warned of its bad effects, cleanliness and ventilation are not only rigidly attended to but the slightest humidity on the lower deck is immediately dissipated by the frequent use of Brodie's stoves. Every man is obliged to muster in a blanket dress for the night watch and they are never unnecessarily exposed if not being permitted to remain below when the service will admit of it. Wooding and watering are performed chiefly by the Kroomen and when any seamen are employed on these duties they are invariably allowed breakfast and afterwards bark and wine, however early they may be required to leave the ship."

A better code of regulations than the above could hardly be produced for the service on the Coast of Africa. How far they were carried into effect the writer of these notes has no means of ascertaining from the documents in the office of the Medical Director-General, but during the remainder of the time this vessel continued on the Station her crew suffered

most severely [illegible] than one occasion from the ravages of fever, and at last it is believed he was finally forced to quit the Station before the time of service had expired.

It is to be regretted that in consequence of the harassing duties of the Surgeon and his subsequent illness, he was unable to send us so full an account of the disease as could have been desired. From a published account (*Med. Chirurgical Review*), however, and from information obtained from other sources it appears that the *Sybille* was employed in the Rights of Benin and Bonny from December 1828 till June 2 1829 when she anchored at Fernando Po. Here they found the *Eden* which ship had lost her Captain, Surgeon, Assistant Surgeon and a great many men by fever contracted at Sierra Leone. All communication between the *Sybille* and the shore was prohibited during her stay with the exception of the purser and one or two superior officers. On July 22 however they received on board a sergeant of the Royal Marine Artillery and seven marines from the *Eden* and on the following day another marine from the settlement. All of these had lately arrived from England in the *Champion*. On June 28 John Mechling, one of the marines who had been received from the *Eden* was attacked with fever and immediately sent on shore. The sergeant who complained of rheumatism was put in the same time placed on the sick list. On the evening of that day the *Sybille* sailed from Fernando Po. In the sergeant and the seven marines who had joined with him, a drachm of cinchona with a gill of rum was administered twice daily for four days and afterwards once a day for a few days longer. On June 29 William Lewis, a boy was seized with fever though he had had no communication with the shore or with Mechling. His case was mild. On July 2 at Princes Island Charles Hall who came on board at Fernando Po was seized, and from that period the disease continued to show itself in different parts of the ship while at sea. It soon assumed a most malignant character and attacked individuals of every class, age and temperament although the negroes men affected with it in comparatively small numbers and in a mild degree. On the first minute investigation the Surgeon was unable to trace the disease either from one to another, mess to mess, and those who attended the sick were in no more affected than those who kept aloof. The Steward, Assistant and the Surgeon himself though both unprotected by previous attacks escaped the fever. The Sailmaker who sewed up the dead bodies in their hammocks, had a slight attack though he had formerly had the yellow fever at Jamaica while the boy who assisted him escaped. Every attention was paid to cleanliness and ventilation, and the dead bodies were speedily committed to the deep, together with their bedding and clothes.

'The disease was evidently yellow fever in the greater degree of intensity. With two exceptions, it was of the continued kind, the stage of excitement short. In the worst cases, it terminated fatally between the third and sixth day, most frequently on the fifth. Death was preceded in

a great number of cases by black vomit often accompanied by a dingy or livid hue of the countenance Yellowness of the eyes and skin was very common before death , it varied from a pale lemon colour to a dark orange hue An officer who died on the eleventh day of a relapse had previously suffered from yellow fever in the West Indies

It is worthy of remark that of the eight marines received from Fernando Po and the *Eden*, who took berth during eight days, two only became affected with fever

"The sudden cessation of the disease says Dr M'Kinnal on August 28 when forty men were on the list and when the power of contagion (if it existed) must have been at its height seems to prove that atmospheric changes had great influence in the production of the disease, as well as in its extinction

"On September 12 the ship arrived at St Helena without a man on the sick list being the seventeenth day from the date of the last interment and the third day from the date of the last death by fever After two days quarantine the officers and men of the *Sybille* went on shore and mixed with the inhabitants from that time till October 20 without any accident resulting from the intercourse

The *Sybille* again anchored at Fernando Po on November 19, when the settlement was considered healthy she afterwards touched at Whydah where bullocks were procured, and then proceeded to cruise at a great distance from the land On January 3 1830 she anchored at Princes Island and was then joined by her tender the *Black Joke* which arrived from Sierra Leone where she had been very sickly and lost twenty three of her men Her crew however were now entirely recovered or convalescent When the *Sybille* was weighing anchor on the 7th a boy, who laboured under common tertian came on board from the *Tyne* which latter vessel was stated to be healthy Six days afterwards namely, on January 13, yellow fever again broke out on the *Sybille* while cruising off Cape Formosa Dr M'Kechnie, an Assistant Surgeon who had lately come from England, and who had been on board the *Black Joke* for a few minutes was the first seized The disease soon increased in the ship and early in February it became very alarming, producing the most dreadful havoc amongst all classes on board The number of cases during this visitation amounted to eighty seven, of which twenty six died with the usual symptoms of the most malignant yellow fever

Afterwards in St Helena roads on March 21 the fever again broke out twenty two cases occurred and six died

The Surgeon gives it as his opinion that the disease on both occasions was principally from noxious emanations from the interior of the ship partially raised by the decomposition of the wood from the long continued heat at first and moisture aided perhaps by an accumulation of different substances under the lining or timber boards of the holds On the other hand it is positively asserted by officers who served in her that no ship

[illegible] The [illegible] ever sent [illegible]

The [illegible] throughout [illegible] contagion [illegible] the officers [illegible] The [illegible] from [illegible] with the exception of himself [illegible] Dr M[illegible] mentions "that the frequent [illegible] pressing diet [illegible] at meal hours when [illegible] particularly in the evening, [illegible] the [illegible] the [illegible] was likely [illegible]

The [illegible] which [illegible]

To this [illegible] and to convince [illegible] not contagious Dr M[illegible] the first patient [illegible] collected about a [illegible] hours before he died [illegible] side of the hall door [illegible] down to the gun [illegible] dinner) returned [illegible] forenoon watch, [illegible] out a glassful of [illegible] being [illegible] yam health [illegible] the next conversation [illegible] immediately afterwards [illegible] o'clock, to prevent [illegible] of counteracting [illegible] ship was crossing off Lagos [illegible] land

A more deliberate [illegible] but it is evident he had [illegible] him The sick being deprived [illegible] of their messmates [illegible] seized while the healthy [illegible] had of escaping and from daily [illegible] their shipmates committed to the [illegible] of the morbid poison whether it were [illegible] it was therefore, above all things [illegible] means or other and there was certainly none so likely to produce that

effect as the evolving measure Dr M Kinnal imposed upon [illegible] almost unnecessary to add that it did not impair his appetite [illegible] nor did he suffer any inconvenience from it afterwards

DISEASES MOST PREVALENT AMONGST CAPTURED SLAVES

It comes not exactly within the scope of this report to allude [illegible] traffic in slaves or to the probability of its ever being put a stop to by [illegible] system of maritime blockade but as it is a subject that bears [illegible] relation to the prospective health of the naval service as well as [illegible] health and condition of the negroes both before and after shipment the following cursory observations by the way may not be considered out of place That the preventive measures have hitherto signally failed there is but too much lamentable proof and that they will still fail in producing [illegible] result there is every possible reason to believe for admitting [illegible] squadron should be increased until every point of the coast is [illegible] and that from an absolute want of access, the export trade is [illegible] it may be asked for how long would such stringent guard [illegible] to be enforced to perpetuate the cure because if at the end of ten years or even twenty it were withdrawn under the present aspect of affairs with other nations, it is but too evident the trade would be renewed with doubled vigour

In the consideration of even more unqualified regret that notwithstanding all that has been done, notwithstanding the vast loss of health [illegible] years of banishment and mental waste endured by a large proportion of the naval service it is clearly evident we have only added to its horrors, and rendered not only the horrors of the middle passage more terrible but have made, within the last ten years the period of detention [illegible] of undescribable suffering also for since the treaty authorizing the capture of vessels fitted for the trade came into operation together with the increase of the squadron and the employment of steam whole cargoes of these unfortunate creatures have actually been so long detained on the beach that the provisions destined for their support have become exhausted, they have been left to die of starvation or disease or as it is reported have been shot down if compelled by hunger to straggle into the bush In addition to all these miseries it not infrequently happens that they are hurriedly driven from place to place along the coast during the night as the cruisers shift their ground or as opportunities offer for their embarkation by which they suffer the greatest privations and no small amount of cruel treatment from their inhuman masters while they contract diseases which subsequently carry them off in vast numbers during the [illegible] What between their vendors buyers and protectors their case is [illegible] much to be pitied

A somewhat mistaken zeal in the cause of oppression it is submitted [illegible] doubtlessly from the most philanthropic motives has upon several occasions been exhibited in burning down the barracoons on the beach

[illegible] of the slaves and in [illegible] inc[illegible]y for [illegible] The former, being [illegible] woodwork and [illegible] are in point of fact [illegible] slave merchant but to the negroes after a long and toilsome [illegible] performed in chains, they are of the greatest possible advantage as places of rest and of shelter from the cold winds of the coast It may also be observed that these expeditions have had the effect of exasperating the tribes resident on some parts of the coast At Whydah where refreshments were formerly liberally supplied it would be dangerous now to land or venture too heedlessly in a boat within gunshot of the beach The approach of men of war or the movements of their boats are made known by signal from place to place with as much precision and regularity as in many of the more civilized parts of Europe

The diseases from which negro slaves suffer most severely on board the vessels destined for their transportation are dysentery fever smallpox ophthalmia and diarrhœa the first two are by far the more generally destructive and it not infrequently happens that they acquire such virulence as to carry off a fourth or even a third of the whole cargo in the short period of a few weeks Medical treatment is too often under these circumstances of little or no avail or rather totally inapplicable not so much from the virulence of the disease as from the want of space and accommodation for the sick from the character of the people themselves who when they are attacked by sickness with something like the instinct peculiar to the inferior animals retire into some secluded corner if they can find one where they doggedly refuse all tenders of assistance even when proffered by the hand of friendship or by people of their own tribe Overcome as it were, by a sense of their misery and desolation they are indifferent to everything that may be going on around them and frequently even obey the calls of nature without moving a limb In this horrible state if left alone they will sullenly repose crouched amongst their own filth until death, which they seem to desire, relieves them of their misery There is perhaps not any condition in which human nature may be viewed in a more revolting aspect than in that of a crowded slave vessel with dysentery on board The effluvium which issues from her decks or rather prisons is peculiar and sickening beyond conception, and is generally perceptible at a great distance to leeward

All that a medical man can do or recommend to be done in such an emergency, common sense will dictate If the chase has been a long one it will be necessary after the capture in the first place and as soon as possible to separate the sick from the healthy not with the view of preventing the propagation of disease however for if it were contagious that would indeed be a vain attempt but to protect the former from the latter for such is their deplorable condition that anything in the nature of a kindly feeling or of compassion for one another is totally extinguished amongst them Generally it will be unsafe at first to unshackle the whole

but when a sick person [illegible] one to [illegible] regimate to separate them at [illegible] will suffer least injurious treatment from the latter The slaves will [illegible] upon the upper deck while the slave deck is being [illegible] generally in the most filthy state in consequence of their being [illegible] during the chase It will be well when circumstances [illegible] this accomplished before the vessels separate The slaves [illegible] will begin to perceive in what relation they stand to [illegible] is their comfort are attended to and their wants [illegible] with [illegible] more freely supplied than sullenness and [illegible] will diminish in proportion The cook of the vessel is generally [illegible] and should be continued in office until she be condemned in one of the Courts of Mixed Commission and the slaves landed If he has been long in the [illegible] and can give correct useful information may be retained from time to time with regard to messing and berthing the slaves But particularly with regard to the treatment of the sick with whom [illegible] duties of prevention and cure is of much more importance than medicine of the latter also he generally understands a sufficiency for all ordinary purposes. It is by no means uncommon to meet with a person of this stamp who has been several times captured and who has by that means picked up a slight smattering of English which makes him more valuable in this capacity

In the treatment of dysentery all the usual remedies with the exception of bleeding have been resorted to most reliance however seems to be placed on calomel or blue pill and opium To take blood from beings so feeble and emaciated as newly captured slaves labouring under any form of disease would be attended with almost immediately fatal results It will also be of importance to defend them as much as possible from the inclemencies of the weather as in their naked and blockless state they suffer [illegible] than can be imagined from the comparatively speaking cold sea air

If however the slaves are found to be labouring under smallpox a somewhat different mode of procedure would be advisable The cruiser should immediately get to windward and there remain having as little communication with her as possible, and then only by means of men bearing recent marks of vaccination upon them or such as have previously had the smallpox and on no account should the [illegible] be permitted to have any communication unless it be those who are protected by a previous attack It would be prudent not to take the crew of the vessel on board, but to run for the nearest point of land or if it were possible for the sake of humanity to the place where they embarked their unhallowed freight, and there land them as by this means there would be less risk of planting the disease amongst some unoffending tribe, where perhaps it was unknown at that time The treatment of smallpox, like that of dysentery must naturally under the circumstances be a most difficult task From the Surgeon's utter ignorance of their language and the difficulty to get them to attend to signs or to understand them when made, there is no possible means of

treating them otherwise than as domestic animals. To keep them as clean as possible is in fact nearly all that can be done with the exception of guarding their eyesight, a point of great importance.

Craw-craw is generally found rife in every cargo of slaves and is frequently communicated to the entire crew in the course of the voyage. It principally infests the outer parts of the arms from the wrists up to the elbow but also spreads over the whole body if neglected. Being, as it is, consequent on depravity of the blood and an unclean state of the skin, although it is also infectious, it is to be cured by an improved diet and cleanliness together with the internal and external use of sulphur. It is also benefited by the preparations of mercury and zinc. It resembles the itch of Europe but is considerably more inveterate and annoying.

Little can be done for the relief of these unfortunate creatures when labouring under fever. Diarrhœa may be arrested by the usual means although it frequently terminates in dysentery. Inflammation of the organs of digestion whether occurring as a simple inflammation of the organ or as a complication of smallpox, medical assistance is of paramount importance and without it the lot of many must be permanent blindness.

The dracunculus or guinea worm principally infests the native of those who have been for some time resident on the Gold Coast although it is also met with along the shores of the Bights of Benin and Biafra. It is generally and regularly convoluted amongst the muscles and tendons on the lower part of the leg about the ankle and in the sole of the foot. When the head or end of the animal presents which it generally does in the centre of a small inflamed patch like a little red boil it must be laid hold of by a pair of forceps or tweezers and drawn out a little every day until the whole of it is removed. Nothing, however, but the most gentle traction should be used or it will break and perhaps not be found again until after considerable suffering its small black head appears through another part of the limb at the end of several weeks. This natural food of maltreatment frequently cause the natives to lose their toes or portion of their feet and sometimes produce permanent lameness by contracting the adhesions of the tendons of the lower extremities [illegible] by the worm. The popular belief is that they exist in the form of larvæ in the [illegible] water (although ova would be a better idea) and being swallowed in this state subsequently find their way to different parts of the body where in consequence of their adventitious position they acquire a sort of [illegible] form. It is, however, more conformable to reason to suppose that they enter the body by passing through the skin as they are generally found in those parts that are most exposed to the influence of external objects.

Yaws is the only other disease which occasionally proves troublesome amongst this class of people like craw craw it is engendered by filth insufficient food, and the overcrowding of many people into a small badly ventilated space. It is also propagated by contact. When once seen it can hardly again be mistaken. In fact from the resemblance some of the

excrescences [illegible] the raspberry it can generally be recognized at first sight When the slave dealers were less hampered in their operations negroes labouring under this and other infectious diseases were generally particularly at the larger establishments, retained for some time in the barracoons previously to shipment in order that they might recover prior to embarkation Of late years however from the strictness with which these depots are watched it has more frequently happened that both the sick and healthy have been hurriedly shipped at all hazards the resident merchant being only too happy to get rid of those likely to prove troublesome, or to die on his hands while the purchaser in the event of his having no responsible agent on shore, having neither time nor opportunity to make a proper selection, has been obliged to receive them on board whether sound or diseased, and make his escape without delay Happily the disease seldom proves fatal, and whether the vessel be captured and the slaves landed in one of our colonies, or escape and reach her destination in the Brazils or Cuba, those labouring under this complaint, on obtaining a more nutritious diet comparative freedom and moderate exercise in the open air are soon cured frequent ablution of the person some slight tonic, together with the application of a solution of nitrate of silver or of that substance in its solid form to the diseased parts being the only remedial means required Astringent applications to moderate the discharge are also useful and to prevent the disease spreading segregation is necessary

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THE EMOTIONAL FACTOR IN SERVICE AVIATION

By Surgeon Lieutenant Commander B Crowhurst Archer M D R N V R

It has been recorded by Bauer[1] that of every hundred British aviators killed in the first year of the Great War, two met their death at the hands of the Germans eight because of defective planes or motors, and ninety were killed as a direct result of their own individual deficiencies By a special system of selection, however these figures were reduced from ninety to twelve by the end of the third year of hostilities Encouraging as were these results of careful physical examination it was further shown that 80 per cent of groundings temporary or permanent was for mental instability

It is therefore clear that medical officers require some definite training in psychological medicine, in order that they may detect latent nervous defects which the stress and strain of flying may sooner or later reveal Some attempt has been made to meet this difficulty by the taking of a careful personal history and family history It is presupposes that the candidate can and is willing to give a full psychiatric history, and further which one reads in Air Publication 130 [2] a solitary mild attack of nervous trouble may be disregarded provided that subsequent progress

his breathing, and the general family history [illegible] condition suggest that the candidate is stable one feels it [illegible] a more systematic mental investigation

Anderson [3] concluded from his experience in the Royal Naval Air Service that there was a particular temperament or aptitude for flying and that its distribution is peculiarly interesting whether looked upon from its racial aspect and ethnological origin or in relation to previous health life and habits Unfortunately, as he says this temperament is a difficult matter to estimate clinically and especially so in the examining room He considered however, that in estimating the strain of war-time flying much help can be obtained by inquiring into the family history as well as the history of the previous health Rippon and Manuel [4] also stressed the importance of a suitable temperament as the criterion of an individual s ability to fly the possession of a suitable physique is the indication whether he can fly at great heights or whether he can stand the strain and stress of continuous flying Examples are given to show that physical fitness without a suitable temperament is no indication of ability to fly, and also that physically unfit men, but with a suitable temperament have become successful aviators In their opinion *mens sana in corpore sano* is the ideal type the healthy mind being the first essential qualification

Later Flack [5] stressed three points as the chief considerations in selection (1) The suitability to acquire the art of flight (the correct degree of neuromuscular co ordination) (2) the capacity for high flights or flights of long duration (physical endurance), (3) mental aptitude for flying, and in the case of the Royal Air Force for combatant service in the air

The present medical examination of pilot candidates is very exacting, and includes special investigations of the eye ear nose throat and nervous system The estimation of mental stability by purely physical means has proved somewhat disappointing and the personality of the aviator is again receiving attention It therefore becomes necessary to consider this subject in some detail

Personality

Eppinger and Hess [6] have attempted to distinguish two types of individuals – the vagotonics and the sympathicotonics—according as one or other of the vegetative nervous systems with its associated glands tend to overact Numerous investigators following different lines of approach have pointed out similar antithesis James s explosive and obstructive types Binet s subjective and objective types and the extravert and introvert of Jung Burt [7] has, however shown that such classifications have for the most part been based on casual impressions, and not on quantitative assessments and statistical analysis and have been conceived as opposed and mutually exclusive categories instead of as cluster and empirical groupings From his own investigations of 500 cases of emotional subnormality he concludes that, apart from the general factor of general emotionality the most important factors are two in number and bipolar

the one making for aggressiveness as contrasted with inhibited emotions, and the other making for pleasurable as contrasted with unpleasurable emotions. He shows the psychopathic personality as one of excessive or defective emotional reaction impaired judgment and inadequate or anti social behaviour. Following the work of Kraepelin [8] it has become generally recognized that mental disorders may be divided into two main groups—manic depressive psychosis and schizophrenia. Kretschmer [9] finds a close connection between his physical and temperamental classification—the cyclothymic temperament tends to be associated with the pyknic short stocky physique while the schizophrenic temperament is usually associated with the physical characteristics of the asthenic and athletic types. Bleuler [10] has pointed out that it is more important to assess the proportions of each type in any individual and has further indicated that the normal lies towards the centre of these two extremes the latter he terms *syntonic*. Generally speaking however one finds that normal behaviour has nearer to the cyclothymic reaction than it does to the schizophrenic reaction. It seems clear that the constitution is a primary factor in determining form and function. The infant begins life with certain natural gifts and definite instincts and is at first equipped only with partly developed senses he has in consequence only partial contact with reality. Its early activities are guided by the pleasure principle described by Freud [11] until conflict arises, and the hedonistic demands are inhibited by other interests. From this moment character begins to develop, but the environmental experiences may lay down basic patterns in the nature of conditioned reflexes on which a mechanism may be built up almost foreign to the physique.

Hoch and Amsden [12] in their study of the relations between personality and the psychosis produced a detailed survey of the personal life of the patient's life in which compulsions laid out not broken down—i.e. the normal period of the lives of such individuals. In the course of their investigations they found that this very period showed definite traits of defect of adaption which they correlated and singled out reactions appearing very early in life which might serve as warning signals of future nervous and mental ill health and from their observations they worked out a detailed guide. Later Amsden [13] in considering personality grouped his information under intellectual activities somatic demands self criticism and self estimate and the urgency or imperative to adaption.

Advances have undoubtedly been made in the study of the personality, but at the same time it has become increasingly clear that character is intimately linked up with the nervous and glandular systems. Craig [14] has pointed out that the endocrine glands play a part and a most important part either as a defence mechanism against mental and physical disturbance or if for some reason they become inadequate or unduly active, by bringing out changes which are prejudicial to the well being of the organism.

Following the modern tendency of research in general medicine, which is to study the disturbances of function of the diseased organ during life rather than await the demonstration of its morbid appearances in the post mortem room, so in psychiatry by examining the longitudinal as well as the cross section of the personality and recognizing the relation of mental illness to the affective life one obtains a dynamic picture of the total personality as a psychosomatic whole.

Intelligence and Temperament

The National Institute of Industrial Psychology [15] has carried out a large amount of research on the problems of vocational guidance. The examination includes in the first place a test of intelligence or rather general mental ability. This test differs in important ways from the scholastic examination. It measures natural capacity rather than acquired knowledge and neither the score nor the interpretation of the score of test, is affected by the personal bias of the examiner for the marking is objective and precise standards of performance have been established. Tests of other abilities—particularly abilities of a practical and mechanical kind—are also applied the nature of the examination varying somewhat according to the special circumstances of the individual.

Temperament is always more difficult to assess by tests than is intelligence. Burt [16] records that the psychogalvanometer has been employed and associative reactions have been the most useful in testing feeling and will. Downey has tried to measure will temperament by how far a candidate can modify his style of handwriting and manner of speech. The Porteus mazes are to some extent tests of recklessness and impulsiveness. The variability in repeated tests of almost any simple kind as measured by the standard deviation, seems partly correlated with instability. The results of the perseveration tests have on the whole been inconclusive. Culpin and May Smith [17], working with the McDougall-Schuster dotting machine showed that anxiety types were less successful at dotting than those free from such symptoms, while the obsessionals were a great success at the test. However, no tests of temperament can yet claim to have passed beyond the stage of tentative experiment and their real value lies in the observations made during the test rather than the candidates score, i.e. they only tend to show the value of the systematic personal interview and the reports of competent observers who have known the candidate during a long period of his life.

The Strain of Warfare

It is now necessary to consider the added strain of warfare. Sandiford [18] found from his Army experience that the majority of cases of war neurosis had either an inherited or acquired predisposition to the condition. Amongst the contributory causes he lays stress upon responsibility, where promotion has been beyond the patient's capacity prolonged stresses and the added sense of responsibility of married men. The extra strain of

being inactive under fire in trench warfare as distinct from service in mobile units, receives attention. The nervous exhaustion resulting from fatigue, and especially lack of sleep together with the fear and physical effects of gas, are also considered. Other contributory causes mentioned are malaria, dysentery, influenza, trench fever, and the fear, anxiety and shame of venereal disease. He agrees however with a very experienced inspector of infantry that "the ability to stand modern war depends almost as much upon the mental and nervous condition as upon the physical condition." Mapother [19] examined nearly 5,000 cases of neurosis originating in the Great War and found that three syndromes made up the great bulk of these so called "shell shock" viz. anxiety neurosis, hysteria, and neurasthenia. Of these, neurasthenia which is a condition of exhaustion became the commonest chronic condition but it was definitely rare in the early stages. It appears that we are most likely to meet anxiety states and hysterical conditions on future active service. It is of the utmost importance to distinguish between these two conditions as not only here but the prognosis is so different in the two cases. For because if the hysteric is associated for even a short time with an anxiety case he will contaminate him and thus render him unfit for future active service. In a discussion at the United Services Section of the Royal Society of Medicine, Mapother [19] stated the position very clearly. "Anxiety neurosis was an over excitability of the fear mechanism and was emotional, or the result of stresses of special duration or severity perpetrated by situations which more or less caused fear in everyone, or situations which had become conditioned stimuli in the particular individual. In hysteria underlying the overt symptoms or so called accidents of hysteria was a varying amount of hysterical character but owing to the strength of the incentive during the War it was often less important than in most peace time cases. The essential genesis of war hysteria consists in the fact that a man with little or no more excitation of the fear mechanism than was universal, showed much less than normal inclination to higher control of fear (particularly less willingness to carry out his duties which thus made disagreeable) and took refuge in the representation of some disability, either physical or mental."

During the Great War it was found that the average number of flying hours was 1 500 to 3 000 before the pilot became permanently grounded so that even if one is successful in eliminating those with latent mental defects, one will be faced with conditions directly due to the particular stresses and strains to which the aviator is exposed. Dudley [20] states that this condition of nervous exhaustion which eventually develops and the time it takes to appear, depends on (*a*) the temperament and habits of the pilot (*b*) the type of work and the machine used (*c*) the prevailing weather conditions, and (*d*) the environment of the airdrome. Even after the War the psychogenic disorders occurring on active service were still imperfectly understood, but some classification had to be found for

[illegible] and [illegible] This [illegible] was in dispute because this syndrome had frequently occurred in men who had not been in the line, nor even heard an explosion and the majority of such cases were finally diagnosed as neurasthenia True neurasthenia, however, is a comparatively rare condition and is, strictly speaking, a state of abnormal fatigability This loose application of the term led to a variety of widely different disorders appearing under this heading particularly mild depressive psychoses with the possible risk of suicide being overlooked

A similar difficulty arose over the diagnosis of exhaustion neuroses In the first place these conditions had nothing to do with the nerves as such, and while usage may claim some justification for psychoneurosis the term minor psychosis is to be preferred The conditions thought to be due to exhaustion were recognized as anxiety states developing from a feeling of inadequacy, and often showed themselves as mild states of confusion with complete lack of concentration Those cases were frequently mis diagnosed as dementia praecox but when transferred permanently to a ground unit or discharged from the Service they completely recovered

For convenience the psychogenic disorders resulting from active service flying may be classified aetiologically thus (1) Those condition developing in otherwise mentally stable individuals—anxiety states (2) Those conditions which are due to the revelation of latent mental instability—psych ses anxiety states hysterical syndromes and the disclosure of a psychopathic personality These conditions would have to be distinguished from cases of toxaemia the epileptic equivalents and numerous disturbances of an organic origin which would be revealed by a full examination of the nervous and other systems

The malingerer would be easy to recognize as he had no mental conflict and tended to imitate some organic disorder which had to be distinguished from organic disease or an hysterical syndrome

Problems in Selection

The selection of candidates has to be made between the ages of 17 and 23 years Generally speaking the optimum flying age is about 24 years below the age of 20 judgment and care may be imperfect but attention must be paid to the physiological and emotional age rather than the chronological age These age limits fall within the period of adolescence which is the second period of emotional development of the man's life The first period is during the first five years of life—the intervening years being regarded as largely concerned with intellectual development The relationship between these two emotional periods is extremely important from the point of view of behaviour, as the storminess or otherwise of adolescence depends a great deal upon the measure of success with which the earlier emotional adjustments have been made

Normally, adolescence is associated with introspection and emotional

[illegible] but this is short lived and the adolescent soon [illegible] his [illegible] and sees his past experiences in a new light [illegible] [illegible] removal of his childhood biases and a fuller understanding of himself and the part he has to play in the world

The common causes of an abnormal degree of instability at adolescence are constitutional and inherited factors, continuous ill-health and unsatisfactory upbringing over a period of years The stresses to be met with at this time are new emotions, desires and incentives weakening of parental supervision and increased personal responsibility It is true that precision, judgment and control are evolving, but they are still insufficient to cope with the situation

Difficulties in selection will also occur within the so called normal groups, i e those who are intellectually socially, and financially adequate, and the examiner should not allow his judgment to be unduly influenced by the candidate's exceptional attainments Potter [21] has recently described one such type which is a constant source of trouble to the medical officer, the egoist with a chain of secondary characteristics He trusts only himself and his own abilities and counsel but should he not progress he may even go to the length of systematizing his failures He is outspoken, antagonistic and always striving after the ultimate, and is consequently often in domestic difficulties Such cases are due to a slight arrest in emotional development, and despite their various attainments are often better excluded from this exacting branch of the Service

The Psychiatric Interview

The examination should be conducted in a quiet comfortable room, and the full co operation of the candidate obtained by a natural and informal approach Notes should not be taken until after a good contact has been established, and in the case of direct entrants the examiner might wear plain clothes with advantage

The heredity must be carefully investigated in order to exclude the possibility of inherited instability Inquiries should be made on both the maternal and paternal sides of the family into race, religion, consanguinity mental deficiency insanity, delinquency fits, alcohol 'nervousness,' eccentricity stammer tubercle, rheumatism, asthma and venereal disease

The personal history should show the physique psychic type temperament and endocrine pattern and should give a detailed account of the physical, emotional, and intellectual development The milestones should be carefully noted In considering the emotions in early childhood attention should be paid to points such as the avoidance of the society of those of his own age, was he a leader or easily led did he join intelligently in games his usual hobbies and was he ever a target of ridicule the presence of nail biting, stammering, somnambulism pavor nocturnus tics hysteric diarrhœa or the presence of the epileptic equivalents In the latent period between the first and second emotional periods—five years to

the onset of puberty—one would look for evidence of apathy over emotionality, day-dreaming or shyness, and at puberty fickleness or discontinuity frequent change of friends, moodiness and withdrawal from reality

The intellectual development would be noted under general scholastic record, favourite subjects strong and weak subjects extra coaching required and examinations attempted with results Scholarships prizes and distinctions gained positions of responsibility held, games record, other school activities and holiday interests would all be reviewed These notes would be supplemented by a special report and questionnaire completed by the Headmaster which will be outlined later

Other points to be considered include past illnesses and traumata emotional stresses and strains emotional characteristics including imagination, disciplinary record and such things as energy somatic demands estimation of self, adaptability to environment philosophical standpoint and pathological traits including evidence of fixations and regressions The environmental influences would be considered from childhood to the present time and his freedom from family social, and financial difficulties noted

Some of the candidates may have flying experience in which case it would be necessary to discover the reasons for joining degree of interest in flying, the attitude of the family to flying his reactions to his first second and third solo flight and a detailed history of any accidents

Headmaster's Report

The value of reports of competent observers who have known the candidate for a considerable time has already been mentioned A suitable questionnaire has been drawn up by Alec Rogers for use in the Vocational Guidance Department of the National Institute of Industrial Psychology and this might well be forwarded to the candidate's Headmaster or Housemaster, accompanied by a letter asking that the form should be completed with care as flying may prove a dangerous occupation to those not suited for it Mr Rogers has kindly allowed me to reproduce a specimen form which has been included at the end of this article Examination of it shows at once how readily it could be adapted to our requirements

Care and Maintenance

The duty of the Medical Officer is to keep the flying personnel fit to take the air at all times and thus prevent accidents This may be effected by careful selection and classification and the insistence upon regular exercise He must further be in constant personal touch with Commander (A) and the flying instructors so that all questions of rest, leave, or change of occupation may be discussed at the first sign of any deviation from the normal

[illegible] that anxiety states are produced by an over excita[illegible] the [illegible] mechanism On active service flying they are caused by [illegible] [illegible] [illegible] severity or by situations which have become [illegible] [illegible] In some cases the cause may be constitutional and in others it may be due to maladjustments during emotional development, and a failure of the personality to reach social and mental maturity It is the last two classes that one aims at eliminating by the psychiatric interview, but since the candidates are not yet emotionally mature at the time of entry, the examiner will have to be a specialist of considerable experience

It might not be out of place to suggest that the young Surgeon Lieutenant would be well advised not to discuss psychopathology in the Mess as he is not only likely to have a disquieting influence on others, but is likely to destroy his own prestige by his apparent or real eccentricities He should in no sense regard himself as an expert in matters of the mind, but should make himself conversant with the elementary principles of mental hygiene and be capable of performing a function equivalent to a good casualty officer in this important branch of medicine He should be able to deal temporarily with an acute anxiety state both psychologically and medicinally where a pilot's services are indispensable to his Captain He should be able to distinguish anxiety states from hysterical syndromes and prevent contamination and above all be capable of taking a good psychiatric history, so that the report accompanying a case sent to hospital would be of some real value to the examining psychiatrist

It is anticipated from the experience of the last War that such cases will not be treated in a general hospital, but will be sent to a special central hospital staffed and equipped to deal with minor psychoses Here discipline will be an important factor The selected site should be in the country some distance from a town and leave should be definitely limited Physical and mental rest with special attention to sleep and the general health, combined with good routine, are of the first importance Each case will be investigated by a fully trained psychiatrist, the emotional difficulties dealt with the patient reassured that he is not going insane and that the matter of not having lived up to his ideals will be adjusted Later occupational therapy may be added and strictly service recreations so that in the end he should be able to feel that he can accept his obligation to continue serving

In contrast to those with anxiety states, it is useless to send the hysteric back into action but it is of the greatest importance to stamp out the idea that hysteria is a means of escaping unpleasantness or an easy way out of the Service

The question of having a senior executive officer in charge of such a hospital to maintain discipline, routine and regulated leave is one worthy of consideration

It would be the duty of a board of medical specialists at what might be

[illegible] [illegible] [illegible]ence to [illegible] [illegible]cial [illegible] The [illegible] [illegible] [illegible] returned to [illegible] [illegible] Air Arm [illegible] the [illegible] of the Service [illegible] [illegible] useful work in accordance with the above considerations [illegible] [illegible] under treated on the usual routine lines by transfer to suitable [illegible]

Intensive psychological treatment might be [illegible] in some cases and its necessity would be in proportion to the [illegible] of the original psychiatric interview It is true that some cases [illegible] such treatment before they could adjust even to civil [illegible] it would be more convenient to transfer such cases requiring [illegible] psychotherapy to an ordinary civilian clinic

CONCLUSIONS

It is evident that a medical officer attached to the Fleet Air Arm requires a thorough grounding in the principles and practice of psychological medicine in addition to his experience in neurology and general medicine This does not mean that he requires to study only the end results as seen in a mental hospital, but rather that he should obtain definite experience in out-patient work dealing with the differential diagnosis and treatment of early major and minor psychoses Given such a training a full psychiatric examination should reveal evidence of latent instability in many cases in which the most extensive physical and physiological investigations have failed. Further the medical officer would be equipped to keep the flying personnel under careful observation, and recognize at the earliest moment the symptoms of staleness which if untreated may result in a complete breakdown

The development of the psychiatric interview can best be brought about by a careful investigation of all cases of grounding The case sheet on entry should be considered alongside the subsequent record of the pilot the detailed and systematic reports of medical officers observing symptoms and finally reporting him sick, together with the results of hospital observation and investigation and the final psychiatric findings at the time of survey If such a system could be put into operation from the outset it would result in a definite contribution to the efficiency and safety of this new and important branch of the Service

SUMMARY

(1) The importance of recognizing the personality as a psychosomatic whole

(2) The value of objective tests of temperament lies in the observations made during the tests rather than the candidate's score

(3) The psychogenic disorders arising during active service flying may be divided into (a) conditions developing in otherwise mentally stable persons i e anxiety states (b) conditions due to latent mental instability—psychoses, anxiety states, hysterical syndromes and the disclosure of a psychopathic personality

(4) The method of conducting the psychiatric interview is outlined and a questionnaire for Headmasters recommended.

(5) The importance is emphasised of experience in out-patient work specializing in the differential diagnosis and treatment of early mental disorders.

(6) A careful examination of all groundings in the light of the entrance examination, the pilot's record, the medical reports, hospital observation and final survey, will not only suggest new lines of research, but assure the progressive development of the psychiatric interview.

FORM FOR HEADMASTER AND/OR HOUSEMASTER — NAME

1	Would you call him a talkative boy?	a	b	c	1
2	Does he usually appear to be cheerful?	a	b	c	2
3	Is he polite and well mannered in his general bearing?	a	b	c	3
4	Is he careful about his personal appearance?	a	b	c	4
5	Is his general manner business like rather than casual?	a	b	c	5
6	Does he get on well with "hearty" boys?	a	b	c	6
7	Does he get on well with quiet boys?	a	b	c	7
8	Would you call him a popular boy?	a	b	c	8
9	Does he appear to be fond of being in the public eye?	a	b	c	9
10	Does he tend to assume a position of leadership amongst any group of boys?	a	b	c	10
11	If he is given a responsible task does he usually perform it satisfactorily?	a	b	c	11
12	Is he an energetic boy?	a	b	c	12
13	Does he appear to have a sense of humour?	a	b	c	13
14	Would you call him an idealistic boy?	a	b	c	14
15	Is he inclined to be troublesome in his behaviour?	a	b	c	15*
16	Does he tend to be moody?	a	b	c	16*
17	Is he inclined to be quick tempered?	a	b	c	17*
18	Would you call him an excitable boy?	a	b	c	18*
19	Does he need to be kept at it?	a	b	c	19*
20	Does he tend to resent correction?	a	b	c	20*
21	Would you call him a timid boy?	a	b	c	21*

It should be remembered, in answering these questions as in answering all the others that *a definitely affirmative answer to a question is to be indicated by the letter a* and not by c. For example in encircled a in reply to question 15 would mean that he is more inclined than most boys of his age to be troublesome in his behaviour.

Which of the characteristics mentioned above appear to you to be most [illegible] indicate by numbers.

What changes have become manifest recently either in his attitude towards work and games, or in his attitude towards himself and other people?

Please indicate by the method used above, the apparent [illegible] in, and aptitude for, the activities named. The collaboration of [illegible] instructor should be sought if it is at all possible. Spaces have been left for necessary additions.

	Interest				*Aptitude*			
Woodwork	a	b	c	—	1	2	3	4
Metalwork	a	b	c	—	1	2	3	4
Art	a	b	c	—	1	2	3	4
Music	a	b	c	—	1	2	3	4
Dramatics	a	b	c	—	1	2	3	4
Debating	a	b	c	—	1	2	3	4
O.T.C.	a	b	c	—	1	2	3	4
Boy Scouts	a	b	—	—	1	2	3	4
Football	a	b	c	—	1	2	3	4
Cricket	a	b	c	—	1	2	3	4
Hockey	a	b	c	—	1	2	3	4
Swimming	a	b	c	—	1	2	3	4
	a	b	c	—	1	2	3	4
	a	b	c	—	1	2	3	4

Have you any vocational suggestions to make?

General remarks

Signed

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A FEW NOTES ON LATERAL DERANGEMENT OF THE KNEE

By [illegible] A MAXWELL OBE [illegible] RN
RN Hospital Chatham

During the last four years 121 knee cases have been admitted to RN Hospital Chatham and of these ninety have been operated upon for internal derangement These being men not weakened by constitutional disease or any disabling diathesis such as peptic ulceration, but representative of the most active and athletic type in the Services their successful treatment is a matter of great importance

An attempt has been made to analyse the results of operation upon them in the hope of adding even a little to our knowledge of the condition It may be confessed at once that the results are disappointingly meagre in spite of the labour which the analysis has entailed but they are set out here, and certain conclusions may be drawn from them

	Duration				Trauma						Vouched for operation						Result of lesion found at operation				Result of operation		
	Under 6 months	6 months to 1 year	1 year to 2 years	Over 2 years	Under 20	Over 20	Actual catching	Later on "Flags"	History of locking	No history of locking	Gross lesion	Lesion only	No lesion	Loose body	Patella or bone	Normal appearances found	Normal no bony fault	Cases of locking	Vouched	Not vouched	Satisfactory	Unsatisfactory	No result
	10	10	34	9	11	23	73	6	78	12	69	11	6	4	7	14 (up to 3 days)	33	11	3	42	1	6	56

More than half the cases were due to games football being easily the commonest single cause Of the twenty-three under 20 years sixteen were only 18 or under, an unexpectedly large proportion

The proportion of medial to lateral cartilages was high It may be that in a few of the doubtful or "no lesion" cases damage to a lateral cartilage may have been overlooked, but even so the disproportion is great Only two cases of cystic lateral cartilage were met with In twelve cases no history of locking was elicited, and while in five of these no lesion was found, in seven there was gross damage In sixty nine cases a gross lesion (bucket handle tear or complete detachment) was found, in sixteen cases the cartilage was found "loose only," and in six no lesion was discovered In six of the "loose only" cases the result was unsatisfactory Four of the negative cases recovered without any ill result from the abortive exploration In seven cases there was a tear of the posterior horn

Post-operative effusion was common, lasting on the average fourteen days Delayed healing, never amounting to more than stitch sepsis and

usually only to slight synovial leakage or [illegible] in eleven cases, with no single instance of recognizable joint infection. The average duration in hospital for the series was thirty-three days, after which most cases were discharged to fourteen days' sick leave followed by a month's light duty.

To about sixty cases after a period of at least six months after operation a postcard questionnaire was sent. Replies were received from fifty-six and were classified —

Very good	42
Satisfactory	6
Poor	8

The replies from the eight cases classified as "poor" are tabulated below —

Case	Pain	Swelling	Locking	Weakness	Wasting	Can play	Operable
1			0				
2	+			+	0	+	
3	+	+	+	+	+		
4	0		0	+	+		
5	+		+	+	0		
6	+		0		0	+	
7	+	+	0	+	0	+	
8	Invalided						

These replies must be considered in the light of the following facts. All but one are still serving—a severe test. Several were personally examined when opportunity arose and were unexpectedly sound. It must be admitted that the reverse might be found in some of the V.G. cases. Were such a questionnaire attempted again the information should be obtained through medical officers although this would be troublesome in many cases. It is felt that the opportunities which Service conditions afford of following up cases are worthy of trial. Only one of the "poor" cases has been invalided and of the ninety total cases only three have been invalided. It is observed that continued service is a severer test of recovery than is applied to most civilian cases other than footballers.

General Conclusions

The diagnosis of internal derangement of a knee is not difficult in the classical case which is still locked or in which there is a clear history of recent typical locking, especially if unlocking has been sudden and characteristic. More often the issue is confused by an uncertain history, associated ligamentous strain, laxity of the joint and a general blurring of the picture. Tenderness over the damaged meniscus rather than the ligament, pain on adduction rather than abduction, reluctance in extension rather than flexion, are all useful guides but not infallible ones. Effusion, muscular wasting and instability indicate a damaged joint but not the nature of the lesion. The most useful aid to diagnosis is an exact and detailed history of the *initial* injury which may have to be dragged from the patient by close and persistent questioning. It is necessary in every

case to exclude bony lesions and loose bodies by ordinary X-rays but these give little positive information Pneumo radiography, on the other hand, is said to demonstrate cartilage lesions and Bohler confirms its value It has not been used in this series

The impression remains that a persistently unreliable knee, when ligamentous weakness or osteoarthritis can be excluded, should be explored, even in the absence of the classical syndrome Such a disability is not likely to be made appreciably worse by the small incisions necessary for the examination of either or even both cartilages Sometimes symptoms apparently referable to the medial meniscus may be due to a lateral lesion, and in the case of definite derangement and locking, if medial exploration proves negative, a second lateral incision should be considered In one case a man was re-admitted with his symptoms unrelieved a year after a medial cartilage, which was "loose only, had been removed At a second operation the lateral cartilage was found grossly torn and dislocated

Contusion of fatty tags must be very definite before it is accepted as adequate cause of locking and the same applies to mere looseness of a meniscus Bohler considers that operation is successful only in cases where there is a gross laceration or dislocation of the cartilage The same authority holds that it is necessary to remove only the interposed torn part of the cartilage, and that complete extirpation is unnecessary This practice has obtained for the last thirty cases of this series, while previously an attempt at total extirpation had always been made It is considered that the results have been better with the modified technique this may be because the method is quicker, and because it involves less traction on the ligaments Removal of the interposed fragment certainly seems adequate for cure, and no ill results have been traced to the residual cartilage

Recurrent dislocation of a cartilage may have led to osteoarthritis, and then the question arises whether more harm will result from operation or from persistent derangement If the diagnosis is clear the cartilage should be removed the patient being warned that though this will save his further locking, he must not expect a cure of his arthritis

Post operative effusion has been common lasting on the average about fourteen days, and occurs even in cases which give finally a perfect result It does not seem to be related to any difference in after treatment and is probably due as Bohler suggests, to the suture of the synovia with catgut It is proposed to adopt for trial in future cases his plan of omitting altogether synovial suture and to rely on suture of the capsule and skin only No doubt leakage of synovial fluid may result in some cases but this never seems to cause serious mischief and may be disregarded

Scrupulous three day preparation and Lane's technique are invariably used As noted above in eleven cases slight skin sepsis or synovial leakage occurred but in no case did it give any evidence of joint infection, and in none did the effusion call for aspiration With modern methods it may be said that the danger of serious infection is very slight

Right angled flexion over the end of the table has been referred to the semi-flexed position over a wedge which is employed by some operators. The former seems to give more control of the joint without strain, explored. A slightly oblique parapatellar incision with the aid of a head lamp, have given adequate exposure and illumination. The limb is exsanguinated by an elastic bandage, and a tourniquet left on till the knee has been firmly bandaged after operation. Removal of the lateral cartilage, especially if cystic, has always been found more difficult, as is the repair of the lateral incision which may be simplified by extending the knee.

As regards after-treatment, practice varies from conservatism to the other extreme. A middle course is probably best. In most of these cases the patients have been encouraged after the first forty eight hours (during which morphia is given freely, if pain is complained of to diminish spasm) to move the joint in bed to the limit of comfort and passive flexion is gently increased each day. They remain in bed till the tenth day, or even later if effusion is marked and after they are allowed up the joint is supported by a crepe bandage for the first week or so. Normal use of the limb is infinitely preferable to any method of passive re-education and the quadriceps will recover its tone and power quickly if the joint derangement has been corrected.

Persistent muscular wasting is a danger signal which suggests an uncorrected lesion, and while electrical stimulation and massage may gradually restore the quadriceps, the recovery is artificial, and the necessity for their use ominous.

Post operative adhesions should not occur if movements are encouraged early and progressively increased, but sometimes effusion and persistent limitation in one direction or another may be due to them. If they are suspected, the joint can be put through its full range of movement under brief anæsthesia by N.O.

Bicycling is an excellent convalescent exercise which patients are often advised to adopt during their sick leave on discharge from hospital.

On the vexed question of non operative treatment it may be said that permanent cure by manipulation is hard to understand once a gross laceration of the cartilage has occurred. Displacement of the damaged meniscus by manipulation into the posterior part of the joint or inter condyloid notch cannot be thought as certain scientific or permanent as its removal by modern operative methods. From the number of successes claimed for the method there should be deducted those who without any treatment might have remained free of symptoms for varying periods. In both groups recurrence must be always possible.

Finally it may be said that when once a definite locking has occurred, and damage to a cartilage is diagnosed there seems to be no good reason for awaiting further attacks before operating.

MALIGNANT DISEASE OF THE TESTICLE

[redacted]

Only recently has it been possible in quite many years to even modify [redacted] and keep in check certain neoplasms of the testicle [redacted] extremely dismal prognosis from almost hopelessly malignant [redacted] by some form of [redacted] and deep rooted belief, and many there are whose clinical experience appears to justify this gloomy attitude Even so, I would ask the reader to approach the subject with an open mind and to review the situation with me in the light of modern research In particular medical officers caring for the health of large bodies of men in the prime of life have unique opportunities for diagnosing these cases (fig 1) which brings us to the first important point

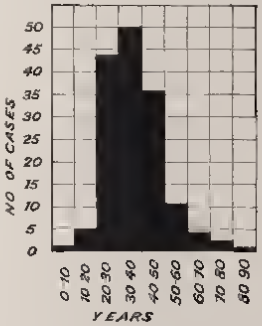


Fig 1 —Age incidence of malignant disease of the testicle

Early Diagnosis

Statistical studies from clinics the world over show that it is comparatively easy to collect scores of cases but a lamentable fact is in evidence everywhere —it is quite exceptional for the patient to arrive for treatment until between the fourth and sixth month after the first symptom The

[illegible] to these tumours [illegible] of cancers of the breast a generation ago There [illegible] much improvement in the earlier diagnosis of carcinoma of the breast but at any rate the contemporary profession is urging the female population to present painless lumps in the breast for diagnosis and treatment in their operable state In the case of tumours of the testicle this urge is not in evidence, and the profession still condones a dilly dally attitude, with the result that dissemination of the neoplasm is allowed to occur

Secondary Growths

Taking an average neoplasm of the testicle are limited to the testicle for two or two and a half months I contend that no organ of the whole body is so perfectly suited to the eradication of malignant disease By dividing the cord every avenue of dissemination is closed immediately

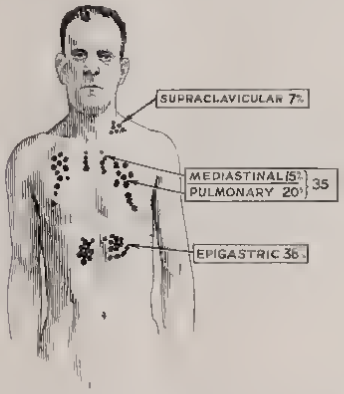


Fig 2 Distribution of secondary deposits from malignant disease of the testicle

Clinical experience shows that metastases from the testicle are carried first to the stereotyped locations indicated in fig 2 This well known aphorism that the clinician should palpate above the umbilicus is borne out by this statistical study It explains also why not a few of these patients who have been examined above the waist line only are sent to a sanatorium

Differential Diagnosis.

The diagnosis of testicular tumours has been complicated unnecessarily by the requirements of examiners for surgical qualifications. From the practical standpoint the problem of the intra-scrotal swelling should be tackled as follows: —

First efficient transillumination. If the swelling is translucent it should be aspirated at an early date, and testicle palpated after the fluid has been removed. If the swelling is definitely non-translucent tuberculosis must be ruled out. In most cases this is an easy diagnosis for the epididymis is craggy and, above all, the vas is thickened. On no account should the testicle be squeezed. Possibly in a few instances the diagnosis of gumma of the testis has been aided by this manœuvre, assuredly in many more neoplastic cells have been squeezed into the venous and lymphatic channels. If gumma seriously enters the clinical picture a Wassermann reaction is required.

All other swellings of the testicle, including those where there is just a hardness of the body of the organ, should be dealt with as follows: —

Under local or general anæsthesia an incision is made over the inguinal canal as for herniotomy. The inguinal canal is opened and the cord is divided as high up as convenient between clamps with the cautery. The incision is prolonged downwards as necessary, to allow atraumatic removal of the testicle intact within its coverings.

If this course is followed, the clinician will, from time to time, suffer some humiliation for an old clotted hæmatocele, an atypical tuberculous lesion, or even a gumma of the testis will be removed unnecessarily. With reasonable clinical acumen such mistakes if one can call them mistakes are few and are relatively unimportant. The reward of adopting this course is great, and in my view it would reduce considerably the present high mortality amongst sufferers from testicular tumours.

Pathological Examination and Classification.

Admittedly the classification of neoplasia of the testicle is difficult. Nevertheless, for the proper understanding of the management of these cases it is essential to grasp some fundamental pathological principles. Before proceeding further, four cardinal facts must be assimilated: (*a*) Tumours composed of one type of cell are the most malignant. (*b*) Tumours composed of highly differentiated cells are relatively benign. (*c*) Most testicular tumours excrete at least some gonadotropic hormone which gives a positive Aschheim Zondek pregnancy test. (*d*) Some testicular tumours are extremely radio-sensitive while others are completely radio resistant.

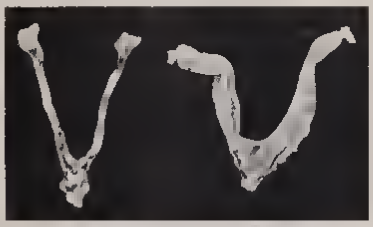
Of the many histological classifications of testicular tumours, none is so easily understood as the following: —

Teratoma	50 per cent.
Seminoma	45 per cent.
Sarcoma	1 per cent.

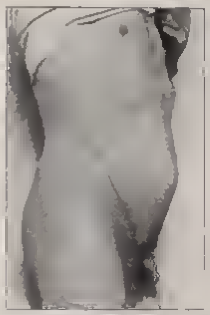
Teratoma tends to occur in patients under 40. Histologically the tumours vary enormously. At one end of the scale there is a completely undifferentiated type—the chorion epithelioma. This tumour is highly malignant; it is often associated with hypertrophy of the breasts and it always gives an extravagantly positive Aschheim-Zondek reaction. At the other end of the scale there is the highly differentiated dermoid containing formed elements such as hair and teeth; such a tumour is practically benign. In between these two extremes lie the bulk of testicular teratoma, and the more undifferentiated they are the greater their malignancy.

Seminoma was the name given by Chevassu to testicular neoplasm which usually attacks men past 40. Macroscopically it is often of a cream consistency, and can be looked upon for practical purposes as a carcinoma. Again, the histologically undifferentiated tumour is extremely malignant, while the more differentiated variety is progressively less malignant.

By differentiation in this instance we imply an arrangement of cells into acini and tubules, akin to adenocarcinoma. The seminoma usually gives a positive pregnancy test.



If we [illegible] we have the high hope [illegible] and control of malignant [illegible] nothing particularly difficult in [illegible] intuitively and accurately. Ninety-five per cent. [illegible] positive test week as it may be. It is [illegible] pathologist's attention, for if weak [illegible] the patient may be robbed, as we shall see [illegible] survival.



[illegible] showing direction of [illegible]



[illegible]

[illegible] The test is as follows (I urge [illegible] this [illegible] the laboratory 0·2 0·1 0·5 [illegible] into 20 [illegible] during forty eight hours. A [illegible] is seen by an [illegible] of the uterine horns [illegible] quantitative estimation of the hormone is beyond the [illegible]

TREATMENT

The following plan of treatment in its entirety [illegible] tumours of the testis [illegible] hopeful one.

Data required.—(1) Anamnestic orchidectomy and [illegible] (2) Aschheim Zondek quantitative hormone estimation. (3) Examination of the patient clinically and radiologically for secondary growths. [illegible] obtained these data and only then can treatment embodying [illegible] knowledge be carried out.

Seminomata are extremely radio sensitive. Deep X ray therapy [illegible] with the contralateral testicle screened, together with deep X ray therapy to the common sites of secondary growths (see fig. 2) can be given with every confidence. The dosage should be in part controlled by the hormone test. It will be found that after effective deep ray treatment the test, if positive, will gradually become negative. Having become negative the patient must return periodically for a hormone test. If this is even faintly positive (and here a reliable laboratory report is fundamental), another course of deep X ray therapy must be commenced.

Teratomata are, for the most part, radio resistant. Deep X rays and radium in this instance are almost, if not completely, useless. Providing the patient has no obvious secondary growths, block dissection of the neolumbar glands as evolved by Maurice Chevassau in France and Frank Hinman in America (figs. 4 and 5) should be carried out. The operation is not so stupendous as has been suggested, nor does it carry a high mortality. Its chief difficulty is on the left side, where the mesenteric vessels are a constant hindrance. I agree with Hinman that the operation should be always carried out on the right side and when the neoplasm is on the left a separate incision on the left is made to eradicate the glands along the iliac vessels.

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THE DIAGNOSIS OF SUPERFICIAL INFECTIONS

[illegible] FRASER M.D.

THE medical profession, perhaps more so than any other, is susceptible to changes in fashion, and the growing awareness among the public of superficial ringworm infections especially that variety known popularly as athlete's foot, may be responsible for the remarkable recent increase in the incidence of these condition. Being a dermatological entity caused by a pathogenic fungus the evidence for diagnosis must be as clear as that for any other parasitic group (Ramsbottom, 1931), and there is reason to believe that there is a growing amount of over-diagnosis on inadequate evidence. In 1934 Gray drew attention to the problem presented by pedal infections, and later Wise and Wolf (1936) deprecated their too free diagnosis. The reason for this is not far to seek. In this country adult education on health matters has fallen largely into the hands of patent medicine advertisers and the practitioner, out of ignorance or lack of facilities, has followed the line of least resistance.

Recognition of the causal agent is essential, in most cases, before labelling the condition and this is impossible without microscopical aid (Haldin-Davis 1930). In mycological circles it is further insisted that the fungus be recognized culturally, and its pathogenicity proved by experimental reproduction of the disease. However, cultural investigations being useless in inexperienced hands (Weidman, 1927) and artificial inoculation out of the question, except in experimental units there remain only the clinical appearances and the microscopical findings.

Nomenclature

The outlook on mycotic infections has been further confused by the variety of terms used to designate similar conditions. By superficial ringworm is generally understood a lesion of the skin caused by a vegetable parasite and, although at times the circinate arrangement is absent, the name has stood the test of time in this country. Tricophytosis and epidermophytosis are descriptive terms, and indicate the genus of the infecting fungus, but without recognition in culture, differentiation is impossible. Their somewhat elegant sound has led to considerable misuse and despite the fact that in the minds of many they stand for a parasitic skin condition of the extremities, the underlying cause is not fully appreciated. Incidentally the predominating genus seems to depend on geographical situation and the table of the world's mycological flora by Weidman (1927) is of considerable interest in this connection.

Recently the American Dermatological Association has labelled infections of the extremities—dermatophytosis, and general infections

elsewhere—dermatomy[illegible] these descript[illegible]ne all-embracing but they cannot be recommended [illegible] general use until a more scientific attitude towards mycologic[illegible]l skin [illegible]g is adopted

The term *tinea* still [illegible] reasons of usefulness and the addition of the site localizes the disease [illegible] tinea pedis tinea cruris tinea barbæ, &c Colloquialisms such as—[illegible] Kung foot, toe rot mango toe, athlete's foot, and many others should [illegible] left to the layman

The Service nomenclature of these conditions is still notoriously vague and haphazard In statistical returns they are variously designated mycotic infections, trichophytosis pompholyx and tinea with the result that accurate statistical deductions are impossible Universal use of tinea would do much to clear up this confusion

Clinical Diagnosis

Superficial ringworm is caused by infection of the upper layer of the epidermis by fungi of the genera trichophyton and epidermophyton Other members of the family gymnoascaceæ (Stitt) may be implicated, but they are rare by comparison Clinically the parasite shows a predilection for certain areas the interdigital spaces and the crural and axillary folds Isolated patches often occur on exposed sites from direct infection frequently from animal sources Apart from the feet where moisture and maceration may modify the picture the lesions are characterized by sharply demarcated intensely itching inflammatory areas with a healing centre Minute vesicles will be found at the periphery where the inflammation is most marked (fig 1), and the pathogen can be recognized microscopically in scrapings from the spreading edge

Fig 2 shews an area on the back of the neck which probably involves the hair Hair infections are also seen in the beard region, but they are extremely uncommon in the Services They can be diagnosed from the more common sycosis barbæ by the presence of mycelia, which may be scanty and by the fact that in tinea barbæ there is always a nodular element present It should be noted that the epidermophyton never affects the hair, and that ringworm of the scalp is a dermatological curiosity in European adults In the Asiatic adult active tinea tonsurans of the large spore variety is a common occurrence

Fig 3 illustrates a typical patch of tinea at a somewhat later stage but the cardinal features can still be made out

Fig 4 is a good example of the common crural infection so frequently seen on tropical service The spreading edge of this type of lesion is always loaded with fungi and scales for examination can be picked off with fine forceps Strangely enough the typical vesicular element is very seldom present in this location

Differentiation must be made from intertrigo due to streptococci and yeasts, the flexural forms of seborrhœic dermatitis and psoriasis, and erythrasma









In general it may be said that any atypical patch of [illegible] should be viewed with suspicion until it has proved itself innocuous.

[illegible]

Pedal infection may take the form of [illegible] but the most typical patch on the plantar [illegible]

outline is often lost, and the [illegible] scale in outline (each peels off in large flakes (fig. 5)

According to C. J. White (1[illegible]) three [illegible] clinical varieties of foot



[illegible]

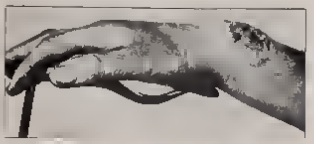


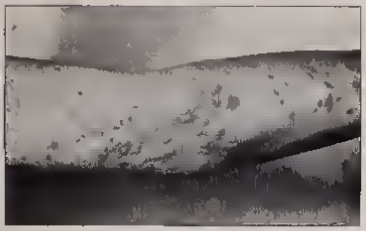
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infestion, but they are too detailed for normal purposes, and the three classifications of Williams (1923) should be used. They are: (1) Hyperkeratosis with scaling; (2) maceration of the skin between the toes; and (3) a vesicular form usually seen on the instep. Whitfield (1934) is of the

opinion that all cases commence as a vesicular or bullous eruption but Gray (1934) is not in entire agreement with him and in this he follows White (1927) in postulating a primary interdigitous type.

Over the last few years all cases with an acute infection seen personally were vesicular in origin. The remains of a vesicular edge between the toes can sometimes be found with a hand lens even at an advanced stage, but it must be remembered that in common with most skin diseases, a combination of types will be the most likely finding.





Differential Diagnosis

The exact nature of the vesicular lesions so frequently seen on the hands and feet has been rather obscured by the emphasis of the French school on the mycotic factor. Discussing vesiculo-bullous and squamous eruptions of the extremities, Darier (1917) stated that dyshidrosis or pompholyx is not a distinct entity but a syndrome and, when not occupational or medicamental, is probably due to fungi. Later he stated (1928) that he found fungi in 80 per cent of cases of pompholyx. Ragab (1934) found fungi in 52 per cent of dyshidrotic eruptions, but most of his cases were ordinary ringworm infections (McLachlan and Brown, 1934).

In an [illegible] of the mechanism of chemoprophylaxis Mitchell and Bowers found that many fungi were responsible and Weary and Wolf [illegible] urged the need for caution in labelling [illegible] results as the stimulus injected

Rarely lubricated [illegible] of the sweat pores [illegible] seen on the [illegible] pads of the [illegible] but found commonly on the [illegible] elsewhere

Nail Infections

Nail infections are now recognized as much more common than formerly [illegible] a growing number of [illegible] in which infected nails may show [illegible] no clinical abnormality (Williams 1928 Williams and Barthel 1929 Gray 1931 Weary and Wolf 1933) Onychomycosis is usually secondary to infection elsewhere and the infective agent gains entrance under the free margin of the nail According to Kurotchkin and Chen (1931) there are two clinical varieties (1) the endonyx type characterized by brittleness and thickness of the nails with ridging and deformity (fig 6) and (2) a form in which the nails appear normal but lose their lustre The diagnosis is made on the appearance of the lesions and the presence of ringworm elsewhere Microscopical examination will of course be carried out as a routine

Differentiation will have to be made from psoriasis eczema and syphilis In psoriasis the nails may show minute pits or gross deformities and the presence of typical lesions elsewhere will clinch the diagnosis The other two diseases are rarely met with in service patients

Distal Eruptions

In 1913 Jadassohn drew attention to spiny hebetoid papules which occurred in several cases of kerion under his care and these distal eruptions are now fully recognized under the name of *ides* this being a short title for epidermophytide or trichophytide They are due to the hematogenous spread of toxins or more rarely fungi themselves from a distal focus of infection and are analogous to tuberculides To produce an id the skin of the subject must be sensitized as the phenomenon is a manifestation of cutaneous allergy Fungi are very rarely recovered from the ide

It is generally insisted that the primary lesion be deep seated (Williams 1927 Dowling 1930) although distal eruptions have been found in superficial infections (Buck 1930 Ayres and Anderson 1934) As the skin is sensitized to fungus products it should react to the intradermal injection of trichophytin

The id eruption may manifest itself in several ways but the three [illegible] mentioned by Bloch (1921) simulate—(1) a lichen eruption (2) urticarial lesions and (3) erythema scarlatiniforme By far the most frequent type seen in daily practice is a vesicular lesion which is well illustrated in fig 7 and fig 8 that a small lichenoid eruption (fig 8) (Williams 1921) It must be remembered however that the percentage of mycotic cases revealing id eruptions is very small (Muende, 1930)

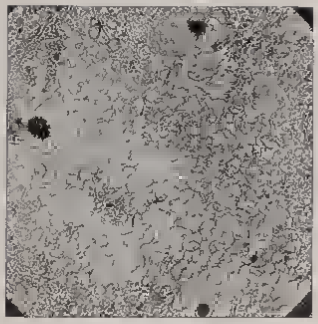


FIG. 9. Intercellular gas ×10



FIG. 10. (continued)

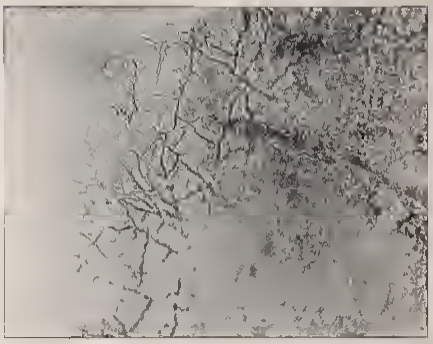
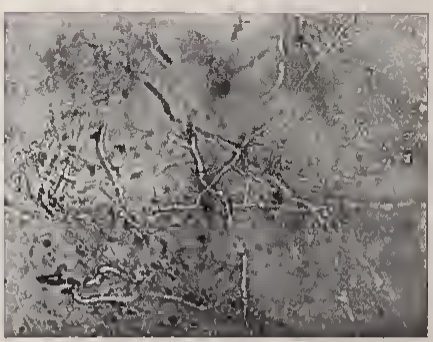


FIG. 11.—Low power of fungus



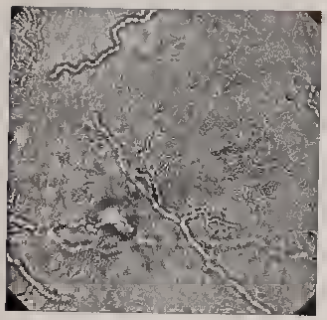


Fig 19.—High power of fungus Mosaic 400

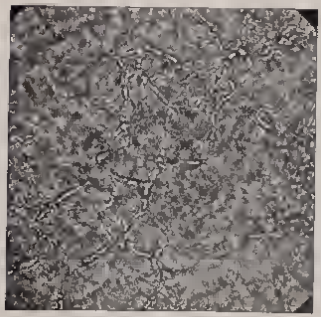


Fig 11 Mosaic × 4

Microscopical Examination

In microscopical investigation the [illegible] one sixth objective [illegible] it makes the hypha stand out as refractile threads. A [illegible] be used with the low power when the material is not too thick [illegible] otherwise concentrated light is essential. The scrapings should be taken from the active edge of the patch, and if very thin, as in tinea cruris, can be examined directly without mounting. Most specimens, however will have to be cleared and the agent most commonly used is liquor potassae. A few drops of the liquor should be added to the scales on a microscope slide, and the whole allowed to stand from one hour upwards without drying out. Gentle heating over a flame for a few seconds will assist the process. Thereafter, a coverslip should be applied and the preparation pressed out into a thin film.

Many methods have been devised to differentiate fungus in the film, but in practice the potash solution is the simplest. The search method of Bachman (1920) never seems to work, and the dyes advocated, such as crasyl violet, acidulated gentian violet and orange G (Bachman, 1920) require considerable delicacy of touch to prevent flooding the field. A combined clearing and staining agent is lactophenol cotton blue —

Lactic acid	1 c.c.
Phenol crystals	1 gram
Glycerine	2 c.c.
Aq. dest.	1 c.c.
Cotton blue	5 per cent.

and if the scales are thick they can be treated with hydroxide, washed in water and mounted in L.C.B. (Swartz and Coat 1936).

Fungi must never be confused with the intercellular spaces which frequently stand out as fine refractile lines (fig. 9). On high power examination they will be seen to be continuous with the cell outline. Another cause of error is the presence of highly refractile vegetable and animal fibres derived from socks and from swabs used to clean the area before scraping. They may assume all shapes and often have a ragged edge (fig. 10).

The actual pathogen is a long seldom branching refractile filament and prolonged search of the field may be required to find it (Hopkins, 1917). The parasite crosses the epidermal cells and shows no tendency to follow their outline. Fig. 11 shows the low power appearance of a mycelium and fig. 12 the high power appearance of the same preparation. The loss of refractility in some parts of the field is due to the focus of the camera. Fig. 13 is a high power photograph from a different case.

Mosaics

A strange mosaic (fig. 14) of what at first appears to be a parasitic mycelium is sometimes seen, and doubt is freely expressed as to the nature

[illegible] the normal cells and the hyphae [illegible] in the [illegible] and this was a promising ground [illegible] Sherwood 193[illegible] Davis [illegible] and Gregory [illegible] Swartz and Cree [illegible] Downing, and Orr (1936), however, still regard it as a discouraged [illegible] and they have found the normal fungus forming part of the [illegible] In this connection the observations of Crawford Jones (1934) on the [illegible] fungi are of interest. In a personal investigation on tinea pedis which is at present in progress one case was seen where the mycelium ended in a mosaic and the finding of this pattern in the film is now taken as an indication for a further search of the preparation, in some cases with success.

Nails

In examining infected nails shavings should be made with a razor blade and they should include material from the under surface of the free edge down to the quick. Scrapings can be made with glass, but they are apt to lead to artefacts in the field due to overlapping of the fragments with the formation of tenuous refractile lines.

The specimen should be boiled for five minutes in liquor potassæ, and transferred to a slide with a platinum loop. It can then be spread by pressure on the coverslip.

Commentary

As the fungus is frequently difficult to detect, the scrapings should be representative of all the active part of the lesion and not one small area. In clinically positive cases with negative microscopical findings Weidman (1927) advises dressing the part for a few days with 4 per cent. dextrose to encourage the growth of fungi. The method has been used several times by the author but the results did not justify the measure.

Conclusion

The fact that there is maceration between the toes does not justify a diagnosis of tinea pedis in the absence of microscopical confirmation. Only in expert hands with years of clinical experience, backed by microscopical correlation, is this permissible. The casual observer need only be reminded that the apposition of any two skin surfaces for a sufficient length of time will lead to maceration and dermatitis.

I wish to express my thanks to the Pathological Laboratory, London School of Dermatology, St. John's Hospital for Diseases of the Skin, Leicester Square, for their kindness in loaning the clinical photographs and for the material in figs. 9, 13 and 14; to the Wellcome Bureau of Scientific Investigation for microphotography, and for their unfailing helpfulness, to Dr. F. Reiss of the National College of Medicine, Shanghai, for the material in figs. 10, 11 and 12; and to Schmidt and Co., Shanghai, for microphotography.

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RABIES PARALYTICA IN TRINIDAD

By Surgeon Lieutenant Commander F G Simon MB Ch B RNVR RN

It was with understandable trepidation that I turned out from my bunk in H.M.S. ——— a small surveying sloop early one morning in July 1936 for a sleepy head hardly could credit the message from the Officer of the Watch, brought to me by my equally sleepy but 'doubly assured Irish S.B.P.O.: 'Would the Medical Officer please arrange for the expulsion of a dangerous bat from the Captain's cabin, forthwith?

Even then, as it dawned on me, while hurriedly dressing and washing that the ship was at anchor at sea, six miles off shore from Trinidad, the reported sacrilege seemed queer, for we had been stationary for six days I was inclined to doubt but orders is orders and so supported by my very sceptical S.B.P.O. forming an 'armed party to repel boarders, I proceeded to that Holy of Holies the Captain's cabin.

And there *was* a bat! Indubitably! There it was, hanging upside down from a swinging cabin lamp and contentedly snoring a hooded, ferocious-looking creature the sinister aspect of its folded wings only

rivalled by the diabolical [illegible] This (at 6 a.m.) fearful spectacle [illegible] while a muttered "Bogorra from [illegible] the attacking force intimated that even Ireland was [illegible] The [illegible] International Brigade attacked straddling the enemy [illegible] with [illegible] salvos of ethyl chloride, and completely defeating him by a subtle enveloping movement with an ether soaked towel And so, triumphantly interred *pro tem* in a large jar of formalin, the invader was borne away

Next as the result of an unofficial and excited Court of Inquiry, I called on the Pathologist at the Colonial Hospital Port of Spain with my trophy He gave the corpse one scornful glance and exclaimed Son, come along and see some genuinely dangerous bats—yours only sucks bananas! Have a dekko at some sure-fire vampires ' Rather chastened, I was led into the laboratory where a really ghastly spectacle met my eyes Imagine a large bird cage crammed to within one inch of its roof with scores of bats—the bottom layer already crushed to death, the middle layer struggling in dying frenzies, and the occupants of the top layer fighting each other fiercely in the intervals of sucking the blood of the injured, the dying, and the dead with complete impartiality

That experience aroused my curiosity in vampires which proved an interesting study

Trinidad first felt the menace of vampires in 1925, when a disease broke out amongst the live stock of Santa Anna Port of Spain affecting mainly cattle, the clinical picture being that of bulbar paralysis, and the principal symptoms salivation constipation grinding of the teeth, tremors, involuntary movements muscular incoordination and finally, paralysis, prostration and dyspnoea ushering in death The puzzled veterinary surgeons noted that only animals left in the pastures both day and night were affected while cattle protected by properly constructed, walled in roofed over sheds escaped even when in contact with animals already sickening which had been brought in from the fields to die They also found that the illness occurred in animals grazing by day rather than in those grazing at night By advising the farmers to confine their stocks to the sheds continuously, they reduced the incidence to a few sporadic cases for the remainder of the year

From 1926 to 1929, however the disease spread appearing first in areas west of Port of Spain and in 1928 breaking out in the south western part of the island, causing great losses By this time the epizootic was showing a definite periodicity, being very rare in the dry season and increasing to an extraordinary extent during the rainy season It also confined itself in the main, to areas 40 miles apart the northern district of San José and the southern district of Siparia Fortunately the sugar growing districts supporting the largest herds, were spared but it was not unusual to find an entirely unaffected region surrounded by heavily infected country In the three years, 1929, 1930 and 1931 the animal mortality amounted to

amounting 1 000 per annum, 90 per cent of deaths being in cattle, but horses mules and asses were also affected, while some cases appeared amongst goats, sheep, and swine Only two cases however appeared amongst dogs

The first human cases appeared in July 1929 and numbered seven in the next two months another six were added In the next three years an average of four cases per annum was reported, but the disease disappeared in 1933 In 1934 however seven cases occurred and in the first half of 1935 (the last period for which statistics were available to the writer) no fewer than twenty-two All fifty-five cases were similar clinically and all died At first localized to the Siparia district the disease spread later to the north of Trinidad but still did not involve the entire island The disease usually appeared in small epidemics over a comparatively short period of from one to ten weeks, with isolated endemic cases cropping up between times The largest epidemic numbered thirteen victims The majority of cases occurred between May and August 1 s in the first four months of the rainy season

In man and in animal the clinical signs were quite distinct In man, the picture was one of ascending myelitis in the animal one of bulbar paralysis Curiously enough the disease did not attack persons who were in close contact with the animals There was a distinct discrepancy in the ratio of human cases to animal cases, e.g in Siparia the human cases were many in proportion to the animal cases, while in other districts animal cases were common, and human cases did not occur at all

Again it was noteworthy that only a few of the fifty-five human cases occurred in Hindus who in Trinidad, comprise the bulk of the cattle owning peasantry and who as in India treat their cows with literally a religious zeal, giving them the most intimate attention and care

On *prima facie* evidence then, the disease was not contagious and there appeared to be no connection between the disease in man and in animals

Many suggestions as to the etiology of this strange disease were made After the Department of Agriculture had eliminated the possibilities of poisonous plants, of altered diet, and of defective care of the animals the local veterinary surgeons unanimously voted for botulism a beautifully obscure and usually uncontradictable diagnosis and moreover a diagnosis backed by the similarity of the disease to that of botulism in cattle in the U S A and Canada and by the isolation of *Clostridium botulinum* from earth and water samples from the affected fields

Unfortunately it proved impossible to reproduce the disease in cattle using a laboratory culture of *Clostridium botulinum* and the use of imported antitoxin completely failed to arrest the disease But the real puzzle began when a toxin similar to that of human botulism was obtained from the brain of a cow and, which when inoculated into a monkey caused the appearance, not of botulism but of rabies, definitely characterized by the finding of Negri s bodies in the brain Further these Negri bodies which had already been noted in the brain cortex of human cases, were found

[illegible] antemortem [illegible] The [illegible] of botulism and [illegible] either disease [illegible] probably the true infection [illegible] the presence of *Clostridium botulinum* [illegible] unconnected with the cause of death

The answer, as [illegible], came from the laboratory [illegible] forwarded, Hurst of the Lister Institute and Flexner of the Rockefeller Institute diagnosed both the human and animal diseases as rabies. Hurst went further and stated that the disease resembled one endemic in South America described as rabies paralytica in which the vector was suspected to be a vampire bat. Hurst's conclusions were confirmed by [illegible] of the Pasteur Institute, [illegible] of Milan and Andrews of Weybridge, the first two workers stating that the virus was identical with that of the South American disease.

This disease, rabies paralytica, has long been known in South America under a variety of names, "Mal de caderas," "Peste de caderas," "Plaga [illegible]," &c. and since 1911 has spread northwards through the rich cattle districts of the Argentine, Paraguay, Bolivia, Northern and Southern Brazil, British Guiana and Venezuela. As it caused enormous damage to live-stock (in some districts of Paraguay the incidence in cattle was 40 per cent and the mortality 100 per cent) the disease was investigated by many workers, including Carini, Haupt, Rehaag, Migone, Pins, Acosta, Rittgardt, Remlinger and Bally. The disease was a bulbar paralysis of animals, chiefly cattle, epidemic during the rainy season and was essentially similar to the disease which appeared later in Trinidad. As in that island poisonous plants were suspected at first but later were exonerated; then the epidemic was held to be a form of epidemic septicaemia hemorrhagica. Finally by the discovery of Negri's bodies post mortem and by serological and cross-immunity tests with the isolated virus, and the virus of rabies, the diagnosis was established as rabies.

But the problem of transmission remained. Much money and energy were wasted on destroying stray and rabid dogs in Brazil until Haupt and Rehaag succinctly observed that there was no relation between the incidence of rabies in dogs and in other animals; that in spite of the interposition of swiftly running rivers, impassable to dogs, the epidemic spread from one river bank to the other; and that finally the destruction and control of dogs did not affect in the least the prevalence of the disease. These two workers pointed out that the disease had the highest mortality in heavily vegetated areas, but that few cases occurred in densely populated districts.

The missing clue was supplied by eye witnesses who assured Carini that they had seen vampire bats attacking cattle in the pastures in broad daylight, the attacked beasts subsequently dying of the disease. But, for some time, no specimen of the vampire bat was obtainable, as the great

herds of cattle in [illegible] vast areas generally remote from human habitation and the bats which attacked them lived in the great forests Eventually a vampire bat *Phyllostoma superciliatum* was the first to be convicted by being captured biting a cow during the daytime Experimentally and histologically, it was found to be infected Soon other species were added to the list of vectors

These vampire bats comprise three groups —

(1) Genus *Desmodus*, two species of which are important vectors *Desmodus rotundus* the common vampire of South America and *Desmodus rufus*, the vampire bat of Trinidad and Central America

(2) Genus *Diaemus* prevalent in certain South American countries

(3) Genus *Diphylla* common in Brazil

Bats form a varied order of mammals the *Chiroptera* (Cr "hand-winged ") in which the fore-limb which is much better developed than the hind-limb is modified for flight They fall into two sub orders, *Megachiroptera* fruit-eaters and *Microchiroptera*, insect eaters As they are insectivora modified for aerial locomotion their most striking character is the true wing, consisting of a skin expansion spread out between the fore limbs fore fingers and extending to the sides and the hind legs, an accessory membrane extends from the tail to each hind leg The strong shoulder girdle and capacious chest the very light hollow bones of the limbs and keel-like sternum, the position of the nipples on the breast, the simple uterus and, generally single birth are all adaptations to the flying habit The brain is of a low type, with an uncovered cerebellum, but there is an abundant distribution of nerves on various parts of the body which explains their marvellous sensitiveness while the circulation of blood in the wings is so active as to amount almost to an inflammation— a fact, in connection with their tender sense of touch which is significant

Almost all bats are nocturnal sleeping by day hanging upside down hitched up by their hind legs and coming out in the twilight to hunt for food when their shrill squeaks may not infrequently be heard While normally they behave in a dazzled fashion during the day ('blind as a bat ') they really can see exceedingly well with their sharp eyes They hibernate in winter in caves barns belfries, forests &c

The vampires (*Phyllostomada*) include a number of blood-suckers, but the chief menace in this connection is the genus *Desmodus* which, as has been related often attacks mammals of considerable size and man himself While both the *Desmodus* and the *Diphylla* of Central America, South America and Trinidad have a bifid foliaceous appendage, *Desmodus* belongs to that group of bats having no nose leaf no tail and an almost vestigial interfemoral membrane It has a wing spread from tip to tip of about 13 in and the female has a slightly larger body and wing expanse than the male In colour the sexes vary both being grey or reddish-brown dorsally and very light brown, almost white ventrally but the male has a silvery-grey sheen lacking in the female.

[illegible] After [illegible] the body of its victim [illegible] spot [illegible] the triangular [illegible] it swiftly and [illegible] and [illegible] In a [illegible] [illegible] the lower jaw serves merely as a hood channel and takes no part in the [illegible] wounding. Almost certainly the painlessness of the bite is due to some preliminary anæsthetizing action of the [illegible] on the host's skin before the actual incision is made as this [illegible] transfusion operation is usually unnoticed by the unfortunate victim

Desmodus has a narrow œsophagus and [illegible] stomach the alimentary canal from mouth to rectum being [illegible] nearly straight with the usual convolutions and appendages the arrangement obviously being another modification for a diet of blood The [illegible] stool is typical of the species

After a gestation period of not less than [illegible] months, the *Desmodus* gives birth to her young, one at a time Breeding goes on all the year round The young are at first breast fed but are soon introduced to their future staple diet by accompanying their parent on her nightly rounds

The vampire is catholic in its taste for blood, biting most warm blooded domesticated animals and poultry and of course, humans cattle horses pigs, sheep and dogs but not for some reason cats It is a curious fact that it prefers dark-skinned victims to those of lighter hue and when the host is multi-coloured, e g a Holstein cow the darker areas are selected for attack When hungry however a ravenous vampire will bite any animal regardless of colour The bat will also bite any part of the human body in actual contact with a mosquito net biting through the fabric e g a knee drawn up in sleep But statistics show that human rabies prophylaxis is limited to the shoeless bare footed peasantry and that the better class shoe clad native is rarely affected Race however does not enter into this except that white people are better protected and are thus less frequently bitten

The favourite sites for attack are in large animals, the shoulder and back of the neck, and in lesser degree the flanks and legs The vampire can make an entire meal unnoticed by the sleeping host and as the toes of the sleeper disturb the bat by movement less than elsewhere on the body they are, in man the preferred area The trunk on the other hand in constant respiratory motion usually escapes

Profuse hæmorrhage may accompany the bite but the victim's only sensation is that of a caressing kiss which partly explains not only the frequency

[illegible] an [illegible] distance at blood stains [illegible] vampire [illegible] itself [illegible] about twenty [illegible] a [illegible] introduced [illegible] fact which may explain the paralytic [illegible] of the [illegible] This type [illegible] habits is well known [illegible] occur after [illegible] [illegible] wolves If *Desmodus* [illegible] the host he [illegible] [illegible] apparently being the [illegible] lazy to make [illegible] [illegible] [illegible] is carried [illegible] through [illegible] or [illegible]

[illegible] vampire [illegible] in the darkness [illegible] [illegible] will attack [illegible] and rabid bats are [illegible] locally in [illegible] [illegible] last [illegible] [illegible] daylight habit so unusual as to [illegible] pathological [illegible] and an ability to see in the daytime [illegible] possessed or [illegible] [illegible] utilized by healthy bats

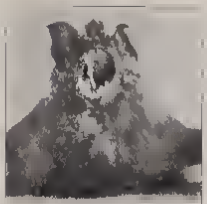
When [illegible] *Desmodus* is so heavily gorged that his flight [illegible] laborious and [illegible] for the nearest safe spot, e.g. a stable [illegible] abandoned [illegible] or [illegible] way to digest his meal These digestive places are always marked [illegible] the presence of the tarry excrement referred to above

Their sleeping places as distinct from these digestive places, are chiefly caves and hollow trees but they have been found in ruins in abandoned houses in cellars under the arches of bridges, and even in underground drains and deep wells When these dormitories occur in and around towns it is [illegible] that the vampire is in as close relationship to man as is the rat The *Desmodus* is very gregarious hanging head downwards in groups [illegible] up to fifty individuals When disturbed they do not at first flutter off but grin at the intruder and move away to [illegible] point [illegible] to a safer spot Only when continually worried do they fly away

[illegible] the epidemic [illegible] of Trinidad, an average of about 15 per cent [illegible] all captured *Desmodus* bats were found infected, while in non-infected [illegible] [illegible] finding fact of infection Negri bodies were demonstrated in about [illegible] out of vampires captured for investigation Two other bats both [illegible] *Artibeus*, a town dweller and *Hemiderma* a country bat, have [illegible] been found naturally infected with the virus but only around epidemic [illegible] and only in a minute percentage of cases Both these fruit eating bats commonly share dormitories with clusters of *Desmodi* Their [illegible] importance in rabies is discussed below

The bulk of this data was obtained from the Experimental Station at the Savannah Port of Spain, where goats were used as hosts experimentally It was strange to observe a placid nanny goat munching away her dinner unconcernedly while half a dozen bats had their dinners on her More usually the captive vampires are fed on defibrinated blood in [illegible] placed in their cages

The exact manner in which these Trinidadian bats originally acquired the infection is still in dispute It is unlikely that the disease was intro









[illegible] infected imported stock as not only are such imports from South [illegible] few in number but Brazilian workers have found that *Desmodus* [illegible] be infected by lapping the blood of infected cattle Nor is it [illegible] though not impossible that infected bats inside the ship crossing [illegible] South America as stowaways in ships The answer, for the writer, [illegible] the proximity of the northern and southern extremities of the island [illegible] mainland of South America, in the aerial prowess of *Desmodus* and [illegible] direction of the prevailing winds

The island of Trinidad is roughly bean shaped and the two poles of the [illegible] not very distant from Venezuela, about seven miles in the north and [illegible] in the south In the north also, several small islands amongst the [illegible] Chacachacare, help to reduce the actual distance by sea for the aerial traveller The prevailing wind too at night blows from the south west at the season of infection Lastly the *Desmodus* is quite as capable a flier as the smaller fruit eating bat which found its way six miles out to sea to the anchored ship in which the writer was serving On these grounds therefore there is a strong probability that the original rabid vampires were unwelcome aerial invaders from South America

Brazilian workers found that a *Desmodus* inoculated with bovine rabies virus could infect healthy bats when kept in confinement with them In another experiment *Desmodus* bats after inoculation with bovine rabies virus though showing no symptoms of rabies themselves were found to be capable of transmitting the disease to healthy cattle within thirty to one hundred and thirty days after experimental inoculation One such bat, killed after five months, was proved to have its salivary glands infected On the other hand while animals could be infected in the laboratory by inoculation with virus present in emulsions of the brains and salivary glands of infected bats using either the subdural, intramuscular, or subcutaneous route or by the injection of the virus into the brain or sciatic nerve injections of similar emulsions from infected animals failed to infect healthy bats It had been noted that the disease in cattle was not contagious and that its spread depended on the presence of a vampire vector Apparently however, the disease in the bats themselves could spread from one bat to another, and it was concluded after prolonged observation of the habits of bats and from the frequency of scars on their bodies that their habit of biting each other and even their own dead was responsible for this spread This cannibalism and saprophagy also explains the occurrence of the infection in the two fruit eating species these had been bitten by rabid vampires, but of course, were incapable themselves of further transmitting the infection

Some workers, not entirely satisfied with this explanation of the transmission of rabies from bat to bat, investigated the possibility of an ectoparasite of bats being the vector of the disease in bats Only two species of such parasites have been found up to date, and they are not considered to be involved Streblid flies are common on *Desmodus* and its

[illegible] Lick as [illegible] Wilson [illegible] Australia [illegible] exceptional. Nature [illegible] but

Study of the epidemiology of human rabies paralytica proved fruitful. It was noted that the disease in animals preceded its appearance in man and it was found that the precaution of protecting the animals in sheds or of removing them from the infected areas deprived the bats of their normal food and turned their attention to human sources. Also certain persons in those areas were habitually bitten by vampires. These factors partially explain two epidemiological findings: first, the curious localization of human epidemics and, second, the frequent occurrence of human rabies paralytica in the districts where the animal disease was rare and vice versa. Finally, at a late stage of infection in the *Desmodus* restlessness and an abnormal activity in the daylight developed. It was thought that such daylight bats, operating in the conditions already mentioned as factors, were the main cause of epidemics in humans.

After an incubation period of three to four weeks, a time interval shorter than that elapsing in the ordinary canine transmitted European rabies, the first symptoms appear in man. The illness is usually a sequel to one bat bite only, and the symptoms vary with the site of the bite. The clinical picture in human cases (1936) was one of an ascending myelitis of acute onset, accompanied by a swinging temperature which arose to 104° F. or higher. Burning and itching of the foot, the thigh, or more occasionally the shoulder heralded the attack, but in a few cases either paralysis of the thigh muscles or retention of urine was the first symptom. In a few days muscular weakness in the thighs developed rapidly into complete paralysis, with loss of knee-jerks and extensor plantar responses. Other leg muscles and those of the trunk were next affected. In all cases either retention or incontinence of urine was present. At a later stage the muscles of deglutition and of respiration became paretic, the development causing increasing difficulty in swallowing, dyspnœa, extreme restlessness, and inevitably death. In some cases paralysis of the arm muscles was a terminal feature, in others the respiratory muscles were spared long enough to prolong the end. Sensory signs and symptoms varied; in a few cases the sensations of pain, touch, and temperature from the lower extremities to the abdomen, were lost. Profuse sweating was an outstanding sign, but there was no nausea, vomiting, or rash; generally the pulse and respiration rates increased progressively with the weakening of the patient. Consciousness, except in delirious intervals, was generally maintained until the end, the patient sensibly answering questions, but in a few cases intellectual stupor accompanied the peak of the infection and coma ushered in death.

Difficulty in swallowing, accompanied sometimes by salivation, occurred only in the final phase, when the bulbar paralysis was obvious. The classical picture of hydrophobia was not seen at all in the initial stages; in fact, in only one case did the spasm of deglutition resemble rabies

[illegible] except in a few cases, where stiffness of the [illegible] of excitement never preceded the nervous [illegible] until the patients exhibited the anxious [illegible] with pneumonia although, both [illegible] were normal Death appeared to [illegible] than to cardiac syncope Except for [illegible] of ocular paralysis were observed in the [illegible] examinations were consistently negative [illegible] Lumbar puncture was similarly unhelpful [illegible] perfectly clear and under normal pressure [illegible] of globulins without any increase of the [illegible] investigation of nasal and pharyngeal [illegible]

At p[illegible] spinal meninges were congested, showing [illegible] over three days duration the medulla although [illegible] tumescency revealed on transverse section [illegible] between the grey and white matter [illegible] days duration) the medulla was [illegible] uniformity in consistency These changes [illegible] only [illegible] was after death could not be ascribed to post mortem degeneration [illegible] other organs revealed only congestion except the heart [illegible] in some cases showed petechial hæmorrhages, especially in the [illegible] wall

Histological examination of the medulla revealed in both the grey and the white cells a marked lymphocytic perivascular infiltration with some [illegible] mononuclears and occasional polymorphs Many of the anterior [illegible] cells showed complete chromatolysis others degeneration and lysis [illegible] quite compatible with either poliomyelitis or hydrophobia but the [illegible] by hydrophobia was clinched by the findings of Negri bodies in [illegible] cells especially those of the Horn of Ammon of the pyramidal [illegible] rather than the layer of polymorphs, and of the paracortical region [illegible] Negri corpuscles are round or oval 3 to 10 microns in size and they occupy the body and prolongations of the nerve-cells but do not occur in the nucleus They vary in number in other parts of the spinal cord but can be found in the brain—in the cerebral peduncles cerebellum medulla oblongata, and in the gasserian ganglion and the spinal ganglia

In laboratory investigations monkeys (*Macacus rhesus*), rabbits and guinea pigs proved the best subjects The Trinidadian virus was inoculated into those animals subdurally, intramuscularly and subcutaneously, and it was also injected into their brains and their sciatic nerves resulting especially in the guinea pig but less so in the rabbit in lesions similar to those of human cases The incubation period was from six to eleven days in monkeys death frequently occurring twelve to forty eight hours after the onset of first symptoms while in rabbits the incubation period was much longer (up to twenty six days)

[illegible]

Animals immune [illegible] vampire bites [illegible]

[illegible] Trinidadian [illegible]

[illegible] the rectal [illegible] protected.

[illegible] symptoms [illegible] appear [illegible] is no curative treatment for rabies [illegible] the melancholy [illegible] fur of 100 per cent mortality bears [illegible] Of course all the [illegible] suspected or diagnosed from the [illegible] early enough in the [illegible] period the classical prophylactic [illegible] of Pasteur are applicable and are 95 per cent efficient [illegible] the authorities are first to appreciate and prejudice of the native [illegible] Indian who would much rather resort to Negro voodooism or to [illegible] cautious of cows than of the medical champs and second the fact that many victims do not even realize that they have been bitten by a vampire for unless the hemorrhage is so profuse as to be noticed on awakening the painless bite may well pass unnoticed. Symptomatic treatment has been found quite futile in both Trinidad and South America.

Control of the epidemic entails the following measures in order of their importance —

(1) Extermination of all *Desmodus* bats in all areas where human or animal paralytic rabies is present the complete absence of bat bites amongst animals, fowls and man to be the final test of success.

Such mass extermination the present writer thinks is impracticable as he believes that the disease is kept at least endemic among these bats by a seasonal immigration of *Desmodus* bats from Venezuela. The migration of infected vampires from Venezuela to Trinidad can be regarded as a small feed under control passing from the reservoir of infection in South America. The tide of infection in that vast continent has crept northwards steadily and surely since the disease was first described in the State of Santa Catarina, Brazil in 1905. Twenty years later this has been lapping at the flimsy barrier afforded by the narrow sea channels separating Trinidad from its geological parent Venezuela. Daily the barrier is flown and the incidence of the disease in the island is increasing, as every succeeding rainy season brings more rabid vampires from the mainland. In the writer's opinion a reduction of the incidence of the infection is the most to be hoped for from attempted complete extermination of *Desmodus*.

Desmodus bats may be destroyed or captured in any of their following haunts —

(a) Their feeding grounds. The method employed is poisoning, and the technique is an adaptation of that employed to poison fruit eating bats. A syrupy paste containing strychnine 30 gr. to 1 oz. is painted over the bat bites of an animal which might fall. Owing to *Desmodus* habit of returning to an old wound one such wound may feed large numbers of vampires night after night—up to five bats may be killed from one poisoned wound and their bodies are found either near the host or some distance

off This method [illegible] arsenite and tartar emetic [illegible] cages while successful [illegible]

(*b*) Nocturnal trapping [illegible] nets has a limited use owing to the difficulties of time [illegible] and weather conditions Trapping was effected between 20 00 and 23 00 o'clock, but, during the rains was by no means a popular occupation Bridges were netted over and the bats subsequently caught in small hand-nets Other vampires were shot while digesting their meal in the animal's hide This method has given way to the other two

(*c*) Diurnal destruction of *Desmodus* in their sleeping places This is the method of choice Netting, shooting, or poisoning by Cyanogas dust may be each employed according to circumstances e g the cyanide dust is used for underground drains, &c When the bats are hiding in inaccessible places, e g, the upper part of a hollow tree prolonged fumigation with sulphur dioxide or the smoke of dried green leaves may be necessary to drive the bats from their nooks into the waiting nets When the caves are too small or too dangerous for work in their interior resort must be made to patience and nets when the bats emerge at dusk, they are an easy prey If a cave can be blocked completely, starvation will in time kill off the inmates

With regard to (*b*) and (*c*), it is obvious that an enormous amount of preliminary survey work is necessary to locate the digestive and sleeping places of *Desmodus* at considerable expense In fact, to exterminate *Desmodus* by these methods, even using poison as an adjunct is a herculean task, the ultimate result of which the writer, for one dare not prophesy

(2) In all districts near infected areas, destruction of individuals and colonies of *Desmodus Hemidesma* and *Artibeus* must be attempted for post mortem examination re presence of Negri bodies in the brain If these bodies are found, a campaign on the lines of (1) should be commenced the prevention of the spread of rabies from bats to men or animals being the criterion of success

(3) (*a*) Protective inoculation Protection of animals is best obtained by immunization with a standard Trinidadian hydrophobia virus, but applied to large herds This method is very expensive The vaccine in common use is prepared from a 33 per cent emulsion of cerebral tissue and its results are encouraging (Owners who concealed their cattle during the vaccination campaign later lost many beasts from the disease) In the Argentine and in Brazil, Kelser's vaccine prepared from a local stock virus by successive passages through horses, is in use and has also given good results while Acosta reports favourably on a vaccine prepared from the lymph and cerebral tissues of affected animals using Fermi's technique

(*b*) Apart from immunization the highest degree of protection is obtained by building houses and cattle sheds impenetrable to bats Country houses in Trinidad are constructed with a space between the roof

[illegible] generally this space is [illegible] the [illegible] while at night all windows [illegible] kept shut. Most better class [illegible] provide a sentinel light consisting usually of a wick immersed in coconut oil—the entire lamp floating in water to prevent fire—the smell of which prevents the invasion of bats. Even a small bed side light [illegible] gives a high degree of protection. The peasantry however [illegible] neglect such precautions and as a result from the great majority [illegible] of victims. Similarly excellent prophylaxis against attacks on animals is established by brightly illuminating their sleeping quarters, but this measure is limited to districts which are supplied with electricity and also has the not inconsiderable drawback of electric current costing the extortionate price of almost one shilling per unit (even in large towns) and thus being tremendously expensive for large herds of cattle. Where electricity is available [illegible] in towns, the incidence of the disease is negligible.

In conclusion, it is interesting to reflect that the medieval superstition of vampires said to be prevalent even to-day in primitive South Eastern Europe especially in Transylvania may have had some foundation in fact. We are all familiar with the macabre legend of the dead leaving their graves to prey upon and destroy the living, thus to reproduce by satanic contamination their own foul selves of their victims pining away to a bloodless death, and of the exhumed corpses of vampires which showed not the decay of the kindly grave. But all these weird happenings can be logically explained, if not proved.

First the empty graves. As in the early nineteenth century grave-robbing by resurrection-men must have been the sole means of obtaining material in the middle-ages for anatomical study so strictly forbidden by both the Roman and Greek Churches. How otherwise did the successors of Galen and Hippocrates carry on? Truly the lamp of research must have glimmered in some strange secret places, and at times smoked sulphurously! It is also significant that the legend is never found in countries whose people cremated their dead. It takes little imagination to presume secret societies for anatomical dissection, whose proselytes were the innocents who became vampires themselves in other words grave robbing anatomists. Second how the unenlightened minds of these distant days must have reacted to the mystery of any obscure case of anæmia with its uncanny relapses and rallies, its unaccountable increasing bloodlessness, inertia, listlessness, and final death! Lastly Transylvania especially that area which was part of pre-war Hungary is a country where its ancient lore of poisoning by arsenic and antimony persists even to-day. These poisons have a marked preservative effect on the bodies of the victims: one recalls the modern examples of Chapman (1902) who disposed of his lady loves with a pinch or two of antimony and of Flannagan and Higgins (1884) who ingeniously reduced the number of their dependents by increasing doses of weed killer. When the bodies

[illegible] rabidly hedges were [illegible] vampires [illegible] from [illegible] death had the full red bloom [illegible] but [illegible] possible in a land of secret [illegible] side line, that there lay in this preservation [illegible] the [illegible] table that the bodies of vampires did not putrefy [illegible] the murderers, and one which they would [illegible] care to [illegible]!

So far, so good! Yet why did these ancient [illegible] themselves as huge vampire bats—of all creatures [illegible] than [illegible] they must have done. A terrified villager [illegible] moonlit night and confronted by some one wearing [illegible] wings and [illegible] mask, would conclude the very worst:

> Like one that on a lonesome road
> Doth walk in fear and dread,
> And having once turned round walks on,
> And turns no more his head;
> Because he knows a frightful fiend
> Doth close behind him tread.

As for the apparition's flight, would not the imaginative [illegible] and credulity of the ignorant peasantry soon present the narrative in a more thrilling, though less accurate form? We imagine that the story did not lose in the telling!

Yet even five hundred years ago the vague idea existed that vampire bats brought evil and mysterious fatal disease, an idea extremely accurate when considering rabies paralytica in the fair isle of Trinidad to-day.

I have to acknowledge with thanks the assistance of Lieutenant Colonel Soto, of the Mexican Army Medical Corps; Dr. Pawan, of the Colonial Medical Service; and Surgeon Commander Barker, Royal Navy, in preparing this article; and the encouraging help of Surgeon Rear Admiral Sheldon Dudley, Royal Navy, who most sympathetically reviewed this maiden effort.

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LAUGHLEN'S METHOD FOR THE RAPID DIAGNOSIS OF SYPHILIS

BY SIR [illegible] WORTH, M.D., F.R.C.P.

The Wassermann test is the accepted standard test for the serological diagnosis of syphilis. The value of other methods is generally measured by their agreement or otherwise with the complement fixation test, although the latter has several disadvantages, namely:—

(1) Numerous factors complicate the test any one of which may be a source of error. To guard against this a complicated system of controls is needed.

(2) Considerable experience of the test is necessary before the results may be accepted as accurate, and various ideas prevail so that the results of any two laboratories are not strictly comparable.

(3) The complement fixation test is influenced by various diseases and may give false results.

(4) A positive reaction may be slow in appearing or be rapidly altered by anti-syphilitic treatment giving a sense of false security.

The introduction of the flocculation or precipitation tests has to a certain extent, removed some of these objections. Tests of this type such as the Kahn test, which is one of the best known of this group are widely used either in preference to the complement fixation test or to check the results obtained by it. The two methods agree remarkably well though the precipitation test is less inclined to give false positives and is slower to become negative following treatment.

Nevertheless an elaborate technique is still required that can only be carried out in a laboratory experience of the test is necessary and the performance of one or two tests at a time is wasteful of time and material.

This leads to the universal practice of waiting till a reasonable number of sera have been collected to make the performance of the test economical. An accurate and immediate means of sero diagnosis which avoided delay would therefore, be of considerable value.

Such a test for syphilis has been described by Laughlen (1935). He used ordinary Kahn antigen stained and sensitized and the test was carried out macroscopically on ordinary microscope slides. The details of the test are given below.

A somewhat similar test using whole blood in small quantities has been devised by Ide and Ide (1936). The antigen used in this method is apparently more complicated to make, and the technique is more elaborate. Hollow ground slides are necessary and low power magnification is required to read most of the results. A different stain is used, so that the appearance of azure or purplish granules of varying size indicates a positive reaction.

From the literature available concerning Laughlen's rapid test the

results appear to be very good, though the total number of tests made has been relatively small. Laughlen (1935) in 100 blood specimens found his agglutination test agreed 98 per cent of times with the Wassermann and 99 per cent with the Kahn. He gives the results of 118 tests made independently in another laboratory in which there was 98.3 per cent agreement with the Wassermann and 97 per cent with the Kahn. Only 20 samples of cerebrospinal fluid were examined and these gave approximately the same results as the blood, but the number is small.

In a later article Laughlen (1938) gives the results obtained in over 1,000 specimens of blood examined by his method and checked against results obtained in the Provincial Laboratories using the Wassermann, Kahn and Hinton tests. In the first 2,000 approximately 97 per cent agreement was obtained with the Wassermann and 98 per cent with the Kahn. In the remaining 3,000 tests there is a 99 per cent agreement with the Wassermann, and 99.4 per cent with the Kahn, and the Kahn and Wassermann agreed in 99.6 per cent. Robinson and Stronie (1937) found that in a thousand cases there was 93 per cent agreement with the Wassermann and 97 per cent with the Kahn. With Laughlen's modified antigen, prepared by the Lederle Laboratories and the same technique, there was complete agreement in the fifty samples of blood tested. They add that Laughlen's method was found to be equally reliable with cerebrospinal fluid but do not give any actual results. There is no indication in these articles as to how the agglutination test differed from the older standard tests, whether it showed more positives or negatives, or whether the variation was solely among the weaker reactions.

Being interested because of the value a rapid test would have in medical practice, Price (1937) tested the Laughlen method, using a group of known negative cases, a group of cases partially treated for syphilis and a group of known untreated syphilitics, and a small number whose history was unknown. The serum of each case was tested by Wassermann, Kahn and Laughlen reactions. There was agreement in the negative group in all cases. From the results obtained in the other groups he believes the Laughlen test in common with the Kahn has a tendency to become positive a few days earlier than the Wassermann and also to be less rapidly affected by treatment. A number of his cases that were under treatment showed weak positive Kahn and Laughlen reactions, although the Wassermann was negative. Similarly, 2 out of 43 cases untreated, but known to have syphilis, showed positive Kahn and Laughlen reactions before the Wassermann. The antigen used was obtained from Dr. Laughlen and from the Lederle Laboratories.

On the other hand, Usher (1938), who used Laughlen antigen obtained from the Lederle Laboratories, found 10.5 per cent false positives in a selected group of 181 cases in which the majority showed a negative reaction by the Eagle flocculation reaction and the remainder were in his opinion almost certainly unlikely to have syphilis. This seems to be an

[illegible] ultimately [illegible] might be [illegible] antigen and to [illegible] in prep[illegible] antigen In [illegible] were positive [illegible] tion relied on wh[illegible] positive by Laug[illegible] In spite of the [illegible] these first results they [illegible] dismissed with scant notice [illegible] that it is 'not a satisfactory test to be used by [illegible] technician without training. In the United Kingdom apparently [illegible] method has not attracted much attention in spite of its possible [illegible] It was partly in order to discover if there was any reason for the [illegible] unpopularity that the present investigation was carried out

The antigen was made and the test carried out as first described by Laughlen (1935) The antigen is prepared from ordinary cholesterolized Kahn antigen to which a small quantity of beharlach R or Sudan III is added to colour it The exact quantity of stain does not matter, but it must be enough for complete saturation, which is aided by heating the mixture in a water bath at exactly 50° C for three to four minutes Next, two drops of Balsam of Peru for each 0 5 c.c of Kahn antigen, which was the usual quantity used are added to increase the sensitivity of the emulsion This mixture is now immediately diluted with ten times its volume of 1 5 per cent sodium chloride solution which has been freshly prepared and warmed to 50° C After thorough mixing the result should be whitish red in colour thin red or deep red mixtures being of no use because they are either too sensitive or too stable The mixture at this stage is relatively stable and inactive Some delay is necessary to allow the large particles of stain to settle before the antigen is sensitized Laughlen suggests that 9 per cent sodium chloride should be used for this process Ammonium sulphate in saturated solution may be employed but over-sensitivity is more easily produced About one drop of 9 per cent saline, freshly made up is required for each cubic centimetre of reagent If this is not sufficient more may be added, but care must be taken not to over sensitize the antigen A correctly sensitized antigen should give a reaction with a strongly positive blood in one minute while there is no agglutination in ten minutes with negative sera After this last saline has been added, the mixture should be allowed to stand for some hours as only then is the maximum sensitivity obtained If over heating of the antigen occurs at all it will not react, therefore care must be taken that the limit of 50° C is not exceeded There is usually little difficulty in the preparation and sensitization anyone familiar in the slightest degree with laboratory technique and using reasonable care can prepare the antigen The modified antigen, together with the sensitizing solution can be obtained commercially from Ledcrle Laboratories of Leeds, the English distributors

Certain modifications have been made since the original article was published by Laughlen himself (1938) but these are mainly in the strength of the two solutions of saline used. There is an apparent increase in the

sensitivity [illegible] active [illegible] only lasts for six to seven days As the first method described [illegible] completely satisfactory results I have not attempted to [illegible] and the reagent has the added advantage of [illegible] for [illegible] six weeks

The actual test is performed [illegible] two drops of the reagent from a capillary pipette on a glass [illegible] and adding two loopfuls of the clear serum to be tested [illegible] platinum loop being used After thorough mixing the slide is sharply tilted backwards and forwards repeatedly A strong positive reaction appears in about one minute and is indicated by gradually enlarging clumps of stained precipitate in a clear colourless fluid A weak positive may appear up to ten minutes after shaking has begun the strength of the reaction being gauged by the length of time it takes to appear Unless definite clumping is observed preferably macroscopically, the reaction should not be considered as positive Any clumping after ten minutes can be ignored as due to evaporation All tests must be done with positive and negative controls

The results of the rapid test were compared with those of the Wassermann reaction on 1,092 samples of blood sent to the laboratory for routine examination The two tests were performed by two different workers and the results compared only when both were complete Due to much routine work it was not possible to include the Kahn test in the comparison

Table I shows the results obtained These compare very favourably with those published by Laughlen (1935) Robinson and Stroude (1937), and others

TABLE I

1	2	3	4	5
Wassermann and Laughlen Positive	Wassermann and Laughlen Negative	Wassermann Positive Laughlen Negative	Wassermann Negative Laughlen Positive	Wassermann Doubtful Positive Laughlen Positive
105	975	6	7	1
10 3 per cent		0 55 per cent	0 64 per cent	0 09 per cent

In column 3 one case gave a definitely false positive Wassermann In column 4 one case gave a negative Wassermann one week although on the preceding and succeeding weeks a strong positive reaction was obtained The blood of the one case in column 5 gave a delayed positive by Laughlen test, and the man was later shown to be suffering from a latent subtertian malarial infection No evidence of syphilis was discovered in this case

It is known that fresh serum gives a much better reaction than serum kept even for a short while in the refrigerator This may account for some of the discrepancies between the Wassermann and the Laughlen test the latter reacting poorly when serum that had stood for some days is used A delay of some days before the tests were carried out was sometimes

unavoidable [illegible] d serum w[illegible] tion clear [illegible] Only a few [illegible] examined The [illegible] were [illegible] included

The Wassermann test must [illegible] be taken as an [illegible] is or is not present The experience of many workers [illegible] years has shown that the variability may be due to the [illegible] and the stage of the disease or the presence of some other [illegible] If an unassorted group clinically diagnosed syphilis is examined [illegible] will there be a positive Wassermann reaction in them all (League of Nations Publication No 3 3—Second Lab Conf on Serodiagnosis of Syphilis 1929) Similarly, when a normal clinically non syphilitic group is examined there will be a varying proportion of positive reactions The uncertainty applies to the precipitation tests as well though to a slightly less degree It has also been shown that when a test gives a high percentage of positive reactions in syphilis a correspondingly high number of positives is obtained from non syphilitics (Kapley and Wilson [illegible]) In the present investigation, it was not possible to obtain the clinical history of all cases whose bloods were examined Some were known to have syphilis others had the examination carried out merely as routine It is impossible, therefore to divide them up into syphilitic and non syphilitic groups But if for the sake of comparison only the Wassermann is considered to give the true reaction every time, or the best indication that syphilis is present the following results are obtained

TABLE II

Test	Syphil[illegible]	Non syphilitic
Wassermann	111 (100 per cent)	190 (100 per cent)
Laughlen	105 (91 [illegible] per cent)	175 (9[illegible] 5 per cent)

The first group is very small but the results compare very favourably with those of other tests It must be borne in mind that at least one Wassermann gave a false positive and that there may have been others which were not discovered It was also found in this investigation that in those groups of sera which were some days old before the Laughlen test was done a greater variation from the results of the Wassermann test occurred It seems probable that if fresh sera had been used in every instance, better results would have been shown The figures given at least indicate that there is little danger of the Laughlen test giving a greater percentage of false positive or negative results than the Wassermann or Kahn test (League of Nations Report No 3 3—Second Lab Conf on Serodiagnosis of Syphilis, 1929)

It is not suggested that this new method should supersede those tried and accepted at least not until many reliable results and comparisons have been published and discussed This should be an easy matter for variations of technique are almost impossible since the test is so simple and

economical [illegible] It is felt that Laughlen's test can [illegible] a useful [illegible] to the older tests

The advantages of it may be pointed out —

(1) The serum need not be inactivated This has been confirmed by collateral tests using the same sample of serum before and after inactivation The reaction was occasionally more intense in the inactivated serum

(2) Little apparatus is required A positive and negative serum for controls are essential

(3) The modification of the Kahn antigen may be carried out by anyone with the simplest knowledge of laboratory technique, and is quickly done The modified antigen remains active for about six weeks after being sensitized and 10 cubic centimetres are sufficient for about 150 tests It is possible to train anyone in this technique in about thirty minutes

(4) No accurate measurement is required, and the test can be carried out in ten minutes

(5) Only small quantities of serum are needed, two medium sized loopfuls being sufficient In some cases whole and dried blood has been used successfully

(6) One test at a time may be carried out conveniently with no waste of time or material

Since Wassermann described the complement fixation test for syphilis in 1906 it has undergone many modifications and there are a number of precipitation tests as well This suggests that no one test is completely satisfactory It is therefore, with some trepidation that another is even suggested but Laughlen has devised a reaction that has certain notable advantages over any other test The ease and rapidity with which it is performed together with an apparently high degree of accuracy are its chief attractive features For these alone it should find favour The usual delay necessary before the result of a blood test can be received is often annoying and disconcerting The rapid test could be used in small hospitals outpatient departments, dermatological and venereal clinics, while waiting for a laboratory report of a Wassermann or Kahn test Laughlen's test is also especially suitable for those who are out of touch with a laboratory, such as ship's doctors In emergency blood transfusions from unknown donors the haemo agglutination tests for compatibility and syphilis can all be done at the same time In the laboratory a doubtful result is often obtained in cases where there is insufficient serum left to do any of the ordinary confirmatory tests but a Laughlen test could be done in the drop or two remaining In the Services laboratory facilities for [illegible], the more complicated tests are not always available but this new method can be carried out under almost any conditions At present, until more experience of Laughlen's reaction has been obtained the results should always be confirmed as soon as possible by one of the well-tried standard tests Syphilis cannot or should not, be diagnosed solely by any

serological reaction, the [illegible] must be [illegible] considered first and the [illegible] total data

[illegible]

(1) A rapid test for the [illegible] is described

(2) The results of the [illegible] with those of the Wassermann in 1,092 samples [illegible]

(3) The rapid test of [illegible] reliable, and to have many advantages over the [illegible]

I wish to express my thanks [illegible] Messrs. Mussen and McIntyre for affording me facilities [illegible] tests.

[illegible]

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OBSERVATIONS ON OBESITY

[illegible] IN RELATION [illegible]

A number of the opinions [illegible] of the excessive corpulence or the "Old Hippy" style of [illegible] are still current to the great astonishment of the younger [illegible] this promising rapid assimilation of food by the body is assigned to the third and third group [illegible] but on one aspect all [illegible] that indolence and spirituous liquor coupled with a [illegible] feeding as was commonly observed in [illegible] wealthy monastic [illegible] induced a laxity of fibre together [illegible] supply tissue favourable to this *embonpoint*.

Certain it is that excessive [illegible] with sloth and simplicity in diet are opposed to [illegible] as illustrated by the Swan of Avon himself in Cæsar's words [illegible]:

> [illegible]
> Sleek-headed [illegible] spirits
> [illegible]
> He thinks [illegible]

Anthony was a man of ample proportions

M

Human fat is a fluid at the temperature of the living body, and is contained in simple cells of spherical form. Its uses are apparently to provide a pad or cushion for various parts, to insulate the body from cold and to act as a fuel reserve. It has, like the fat of most other animals, been employed otherwise than in its original capacity.

The story is told of the Irish tallow chandler, who during the invasion of Cromwell's army, made candles from the fat of Englishmen which were remarkable for their good quality; but when clashes became less frequent and his customers began to complain of the growing inferiority of his wares, he apologized by saying, "I am sorry to inform you that the times are so bad that I have been short of Englishmen for a long time."

Obesity may or may not be considered a serious defect. It is true that the ancients held fat persons in sovereign contempt; but in some countries, especially in the East, moderate obesity, and abundance of curves, is much admired, and Tunisian young ladies are regularly fattened for marriage.

Enormous bulk is considered by the Hottentots to be perfection, while the sage Erasmus states that the Gordii earned their adoration for bulk to such lengths that they raised the fattest amongst them to the throne.

Perhaps the most famous fat men of the medical faculty was Dr Cheyne who tipped the scale at 32 stone. The literature, however reveals him as quite unworthy of special distinction when ranged against him is Mr Jacob Powell, of Stebbing in Essex who died in 1754, and whose body was above 5 yards in circumference (at what point, alas is not stated), but who weighed 560 lb., and required sixteen men to bear him to his grave. With him in this gargantuan company are Mr Lambert of Leicestershire, who weighed 52 stone 11 lb.; Samuel Sugars who died in 1816 at the age of 52, weighing 50 stone; and Mr Spooner, of Shillington near Tenworth, who died in 1755 and who weighed no less than 40 stone 9 lb. and measured 1ft. 3 in. across the shoulders. A young man of Lincoln is said to have ingested 18 lb. of beef daily, and to have died at the age of 28 in 1724, weighing 532 lb.

But these in their turn must give place to the Saxon Duke to Hudibras who

> "did grow so fat
> That mice (his historian relate)
> Ate grots and lodgings to dwell in
> His postmortem parts without his feeling."

Embonpoint is very generally taken to be a sign of good humour and a cheery disposition, whilst excessive leanness is supposed to tend to a sour and crabbed outlook on life. Solomon said "A merry heart doeth good like medicine" but a broken spirit drieth the bones.

Although the quantity of food consumed as a general rule has a direct effect on the bulk of the feeder there are numerous cases on record where

[illegible] regrettably skinn[illegible] prisoners who are [illegible] invisible but [illegible] massive proportions [illegible] their corsetieres

Doubtless many [illegible] these cases have a pathological significance and probably amongst those is that of the French prisoner who daily ate 4 lb of raw cow udder, 10 lb of raw beef and 2 lb of candles, to say nothing of drinking 5 quarts of porter when obtainable and who despite all this remained a perfect skeleton

For the diminution of corpulency dieting on bananas and milk and in various other ways exercise and the Turkish bath are in much favour to-day but our forefathers who preferred more heroic and possibly efficacious remedies for the immediate matter concerned dealt with this affliction with such measures as a quarter ounce of common Castile soap every night water gruel and brown bread for one year In one of the most celebrated cases that of a Spanish General of imposing dimensions he was caused to consume large draughts of vinegar which so reduced him that he could fold his skin around his body It appears that in his case even this speed of reduction failed to quell his indomitable spirit and that he lived to a ripe old age though the method of disposal of the flowing folds of epidermis is not related They must have sorely handicapped him in his campaigns

Discomfort and sorrow play their part in the shaping of the human form to no small extent and according to Sir John Sinclair a Newmarket jockey has not infrequently reduced himself a stone and a half in a week or ten days, by sweating horse riding, and a spare diet A plump widow has by weeping become a skeleton in a month or so

Moderate increase in the secretion of animal oil rather adds to the facility of motion and improves the beauty of its possessor but if it exceed this degree the play of the different organs is impeded, the pulse oppressed, the breathing laborious and there is a general tendency to palpitation or drowsiness, as exhibited by the fat boy of Pickwick fame, and the ever present danger of apoplexy

In splanchnic obesity the encumbered viscera are more or less buried in fat, which generally overloads the omentum, and gives that projecting rotundity to the abdomen which is vulgarly distinguished by the name of Pot-Belly and is well described by Prince Henry in his address to Falstaff as "a huge hill of flesh a globe of sinful continents

For the reduction of this deformity the fair sex has called up all the heavy artillery of both empiric and ritual medicine to the task and one may read with delighted horror of the Egyptian maidens feasting on skinned mice, and the matrons on udders flesh as a sovereign cure for this bulging of the contours But surely this is little worse than the modern Trans-Atlantic method by which a meal of tapeworm ova is relied upon to have the required effect, when Nature has taken her course and the ova are hatched out

This dissertation cannot be better concluded than by a brief account

[illegible]ite Mr Wood, the [illegible] parents, he was [illegible] self in [illegible] year of [illegible] stone, and laboured under very great ill health from indigestion, was also suffocated and was subject to fits of gout and epilepsy Fortunately for him, a friend pointed out to him the life of Cornaro, the Italian count noted for his frugal life who died at the age of 98 in 1458 having lived for over seventy years on a diet of one egg per diem Of him Addison writes in the *Spectator* as "maintaining such a spirit of cheerfulness religion and good sense as are the natural concomitants of temperance and sobriety" The miller thereupon determined to take Cornaro for his model and see if he could surpass him He made his change gradually however and with prudence first diminishing his ale a pint a day, and using a much smaller portion of animal food until finally he limited himself to a diet of a pound and a half twice a day of a simple pudding made of sea biscuit, flour and skim milk Besides this he took nothing of solids or fluids having taught himself to abstain even from water, and by this regimen he reduced himself to the condition of a middle sized man of firm flesh well coloured complexion, and sound health

Were all of us possessed of this stupendous power to immolate and mortify the flesh, this essay would never have been written corsets, Swedish masseurs and reducing creams would have been averted and Laurel would be without a Hardy But the thought of Lord Mayor's banquets and reunion dinners to say nothing of Monday morning breakfasts under these conditions is too ghoulish to contemplate Rather let us say

—Ave Adeps possibly with the mental reservation, 'Absit (abd)-omen

Clinical Notes

LYMPHOGRANULOMA INGUINALE

By Surgeon Lieutenant Commander H Gillman Willis RN

The following case of lymphogranuloma inguinale which occurred in H M S *Hotspur* presents certain unusual features which may make it worth placing on record

Able Seaman W M D, aged 37 was first seen on October 26, 1938 with [illegible] small superficial abrasions on the penis

History of Present Condition—Coitus with a white woman in London three weeks previously No precautions save urination were taken Saline dressings were applied to the abrasions On November 1, 1938, he had an irritable rash on abdomen buttocks and penis obviously scabetic for which he was given oral baths and sulphur ointment This at once stopped the irritation and on November 4 1938 he was considered clear of scabies

He was seen again on November 11 1938 complaining of painful lumps in both groins the inner and middle glands of the horizontal chain being involved on both sides They were matted together, enlarged and tender, and the skin

ver them was slightly reddened [illegible] looked ill and was running an [illegible] temperature He was placed [illegible] sick list and confined to bed

In spite of his statement that contact [illegible] only taken place in London, aed that with a white woman six weeks previously the condition strongly suggested climatic bubo I therefore attempted without success, to obtain a supply of Frei s Antigen at Malta, aed again at Aden In the meantime the redness and swelling had increased especially on the left on which side the glands became adherent to the skin

On November 20, 1938 definite fluctuation was detected on that side A large bore needle was inserted from the side through healthy skin a syringe attached and a little very thick creamy pus withdrawn On microscopic examination of this pus, no organisms were detected

On November 23, 1938, the skin over these glands broke down, discharging thin bloodstained pus through several openings These openings rapidly enlarged till the patient had a single opening the size of half a crown, and a sinus of ¾ in deep The glands in the right groin did not suppurate

Tartar emetic dressings were applied and a second endeavour to obtain Frei s Antigen having failed I decided to commence a course of injections of tartar emetic, commencing with ½ gr in 2 c c of sterile water intravenously Injections were repeated on alternate days each one increasing by ½ gr up to a maximum of 2½ gr in 10 c c sterile water 17½ gr were given in all These injections caused little discomfort save mild nausea on one occasion and attacks of pain in both shoulders On several occasions the glands appeared slightly larger and more tender following an injection but rapidly improved again

Healing of the ulcer was steady and uneventful, but slow it had healed finally on December 17, 1938

At this date the glands in both groins were still enlarged, but not tender and the patient looked, and stated that he felt quite fit He was discharged to duty on December 18, 1938 having been thirty seven days sick

On January 12 1939 through the courtesy of Dr W G Sawers of the School of Public Health and Tropical Medicine, University of Sydney it became possible to obtain a supply of Frei s Antigen

By this time the patient s glandular enlargement had almost disappeared and the sole remaining evidence was the scar in his left groin He had had three weeks leave and seemed completely recovered Frei s Antigen 0 1 c c, was injected *intra cutem* into the flexor surface of his right forearm, and 0 1 c c Frei s control into his left A volunteer, who had suffered from ulcerative granuloma, was used as a control receiving in the same manner 0 1 c c Frei s Antigen Results were read in forty eight hours

The only reaction shown was in the right forearm of the patient who exhibited a papule 8 mm in diameter surrounded by an erythema 2 by 2½ c m The left forearm and the volunteer s arm, gave no reaction

The following points are of interest —

(1) The long period approximately six weeks, between infection and the glandular enlargement
(2) Both right and left groins were involved
(3) The presence of scabies which at first masked the diagnosis
(4) The infection was contracted from a white woman in London which must be very uncommon

Close questioning failed to reveal any other possible source of infection The patient had not been out of England for two months The woman was not a prostitute but a married woman Her husband was not apparently a sailor, who might have contracted the disease abroad and infected her

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A CASE OF HÆMORRHAGIC SMALLPOX

By Surgeon Lieutenant Commander T. L. CLEVELAND, R.N.

An Able Seaman aged 20, reported sick on board his ship on the morning of May 2 1938, after several days indisposition complaining of general malaise and nausea. Temperature 100 F. pulse 82, respiration 23. No abnormal physical signs were present nor was the past history helpful. He was placed on the sick list and during the day had attacks of vomiting at half hourly intervals several round worms appearing in the vomit. The same evening a macular erythematous rash appeared in the flanks extending into the axilla. He was transferred to R.N. Hospital, Hong Kong forthwith.

On admission to hospital temperature 103° F, pulse 92 respiration 24. The rash was a punctate erythema with a few petechiæ, mostly in the flanks but also involving the groins and proximal flexures of the limbs. No rash on face or extremities. The distribution was thus in essentials the same as that of scarlet fever. No sore throat was present but there were signs of commencing septic stomatitis with simple furring of the tongue. The local appearance resembled that of scarlet fever. Laboratory investigations revealed (1) A leucocytosis of 12,000 (polys. 81 per cent., lymphos. 15 per cent., monos. 4 per cent.) (2) No malarial parasites in the blood. (3) Urine normal apart from a trace of albumin and a few red cells. A provisional diagnosis of scarlet fever was made and the case isolated.

During the next two days the patient's condition became much worse. The face was œdematous (possibly in connection with the stomatitis) and the urine became full of blood but contained no casts. The rash was more profuse, with pronounced petechiæ, the papules being coarser than in the typical scarlet fever rash. The rash continued chiefly on the trunk, scanty on the extremities and absent from the face.

As some uncertainty was felt as to the diagnosis, notably because of the early renal complications, the medical officer in charge of the Government Infectious Diseases Hospital was asked to see the case. He unhesitatingly pronounced it to be a case of hæmorrhagic smallpox. He had recently seen over a thousand cases of smallpox in the local epidemic which was still continuing. The patient's M.H.S. showed an entry of M.V.V. after vaccination the previous month but no scars were visible.

The patient's picture from then onwards became appalling. Sheets of hæmorrhage began to occur in the skin at first closely following the distribution of the rash (i.e. in flanks, groins and other proximal flexures). The temperature which reached 104° F. soon after entry fell uninterruptedly to normal on the sixth day, but the respirations rose steadily from 24 on entry to 70 on the sixth day (the great respiration rate is apparently typical of this form of smallpox). The patient became more and more stuporose, more and more cyanosed, and death occurred on the eighth day. At no period did any rash remotely resembling that of ordinary smallpox appear.

In acute hæmorrhagic smallpox the ordinary smallpox rash never appears; further the rash not only resembles a scarlet fever rash closely, but both the rash and the hæmorrhages that occur later, have the scarlet fever rash distribution i.e.—heavy on the trunk but scanty on the extremities (absent on the face) and with a predilection for the flexures which is the exact reverse of the ordinary smallpox rash distribution. This favours the extremities and face and avoids the flexures thus the tendency to think of scarlet fever and not to think of smallpox is very strong. The main points that help are that in the early stages of hæmorrhagic smallpox sore throat is absent whilst in the later stages hæmorrhages occur. The latter point would not help the diagnosis if the scarlet fever were hæmorrhagic too but hæmorrhagic scarlet fever is so rare that some deny its

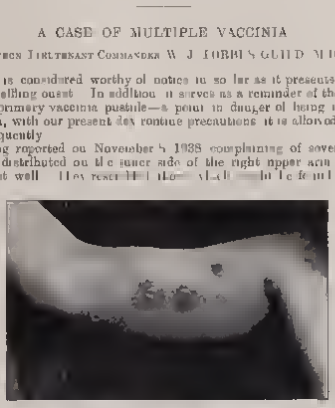
[illegible] that all such cases in the pre[illegible] haemorrhagic smallpox. A streptococcal septicaemia would cause a [illegible]te uniform rash and purpuric haemorrhages but the distribution of rash and haemorrhages could hardly be so typical as the rash of true scarlet fever, and therefore as the rash and haemorrhages of haemorrhagic smallpox (i.e. centripetal, with heaviest incidence in the flexures, groins and other proximal flexures). All this applies of course, only to the most severe cases of haemorrhagic smallpox. Every grade of severity occurs and at the other end of the scale is the slight prodromal haemorrhagic type of rash that later gives way to the typical smallpox eruption the only result being an increase in the severity of the disease. Pure haemorrhagic smallpox as described above is invariably fatal.

A CASE OF MULTIPLE VACCINIA

By Surgeon Lieutenant-Commander W. J. Jobbins Guild, M.B., R.N.

This case is considered worthy of notice in so far as it presents an unusual and at first baffling aspect. In addition it serves as a reminder of the exciting cause of a primary vaccinia pustule—a point in danger of being insufficiently stressed when, with our present day routine precautions it is often to manifest itself so infrequently.

This rating reported on November 5, 1938, complaining of seven flat superficial vesicles distributed on the inner side of the right upper arm and on the opposing chest wall. They resembled [illegible] in the female in a herpes.



There was no surrounding inflammation and the rating himself considered them to have been produced during a night's passage. Since [illegible] enlarged axillary glands were present. On the following day the vesicles had increased in diameter to about the size of a sixpence and had begun to show umbilication. This latter feature pointed to the case of a vaccinia but no history of possible contact could be obtained. The rating had not been in the proximity of cows or other animals.

On the fourth day following admission the patient developed a general malaise of some severity with temp. 102° F. [illegible] inflammatory reaction around each spot now definitely pustular in type—and the whole of his upper arm swollen and tense. About this time the patient's memory no doubt jolted by the one track interrogation of everyone who saw his arm, was able to afford the information required. He recollected that when boxing at Uxbridge on November 2

[illegible] rating with [illegible] log on his [illegible] protecting [illegible] vaccination They had gone [illegible] several times during the boat [illegible] it is easy to visualize how the pat[illegible] hot iron would displace the protection and become vaccinated by contact [illegible] in a different site or its inner aspect The two pustules on the chest wall [illegible] probably produced by direct transfer from those on the arm opposite to th[illegible]

It is unfortunate, in a way, that the accompanying photograph was obtained only when the surrounding reaction had developed [illegible] h a degree as to make the diagnosis appear quite obvious As seen during the first three days, the nature of the condition was quite puzzling

It only remains to add that the patient had been vaccinated some three months previously but had failed to take.

THREE CASES OF MALARIA[1]

By Lieutenant Commander R H Barrett M R C S L R C P
D P H Retd R N Retd
Assistant Medical Officer Port of London

The ordinal work of a Port Health Authority may be divided roughly into two groups of cases The first consists of recognized or suspected cases of infectious illness on ships in which a surgeon is carried the second of illness reported on board ships who do not carry a medical officer The three cases I have selected for record are examples of the second group and they illustrate the diversity of symptoms which may confront one in cases of malaria on arrival in port

The first two cases arrived in the Port of London in a small tramp steamer from the Grecian Archipelago Fortunately although the ship was a foreigner, the Master's knowledge of English was good, and he had kept accurate temperature charts

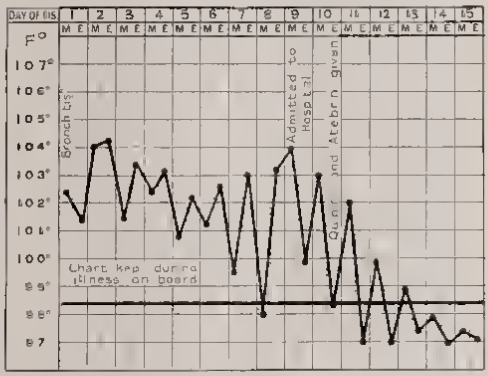
Case I had a two day history of attacks of bitter shivering, and sweating On examination the only positive finding was a firm enlarged spleen The diagnosis here presented no difficulties as the patient had just returned from a part of the world where malaria is endemic The interest of the case lay in the fact that as soon as he was placed in the ambulance launch he produced a typical severe malarial rigor which to one unversed in tropical practice was most instructive

It started with the patient looking a little blue about the face and having a mild shivering attack Instead of passing off this became more marked and the cyanosis became deeper making the whiteness of the teeth and sclerotics stand out in contrast His teeth were chattering and the shivering became so violent that his limbs were moving quite uncontrollably Piling on blankets made no difference After a few minutes he was deeply cyanosed and although the skin felt cool to touch his temperature was 104 2° F The pulse was poor in volume but quite regular at about 110 His expression was anxious and he was obviously frightened by the severity of the symptoms So violent did his shivering become that it was difficult to keep him from falling off the stretcher The rigor lasted about twenty-five minutes and it is followed about an hour later by a profuse sweat

A blood smear showed a benign tertian infection and as the crises appeared on alternate days it was presumably a double infection Recovery proved uneventful under atebrin and quinine

[1] By kind permission of the proprietors and Editor of *St Bartholomew's Hospital Journal*

Case 2.—The [illegible] the same ship. He [illegible] ted sick nine [illegible] riously, and had been [illegible] el by a doctor to [illegible] bronchitis. He had been running a high temperature [illegible] ver since he [illegible] was. Although [illegible] light was bad in his quarters on board, it was possible to see that he looked [illegible] rash and ill and had herpes of the lips. His temperature was then 103° F. and his pulse 120. The respirations were also [illegible] 24. A careful examination of the chest and abdomen revealed dull areas at both bases and in my opinion [illegible] spaces. The spleen was not palpable. On arrival in hospital he was found to have consolidation of his right lower lobe and a left sided pleural effusion extending up into the axilla and displacing the mediastinum to the right. His illness had already lasted nine days or more, and his temperature had now begun



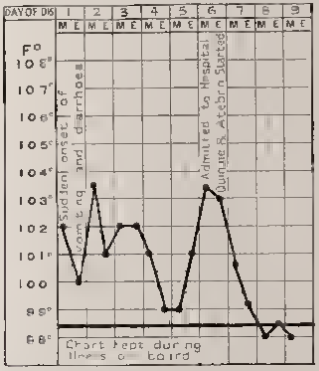
to swing, and for the two succeeding days no improvement took place. Indeed his condition was beginning to give rise to some anxiety, and it was thought that the effusion was becoming purulent. Exploratory puncture, however, showed that this was not the case. A slight rigor had occurred on two afternoons in succession at about 4 p.m. This led to a blood smear being taken, which showed the presence of malignant tertian rings. A course of treatment was at once started with the result that after ten days all the signs and symptoms had disappeared.

It is interesting to speculate whether this was a true case of malarial pneumonia, or merely a lobar pneumonia case in which malaria existed. With regard to these two cases, it would seem that where one proved case of malarial infection has already been found in a ship any other patient from that ship should be suspect until proved to the contrary.

The accompanying chart shows the trend of temperature both before and after specific treatment.

Case 3 [illegible]—In a trader ship from Arabourgal The Master spoke English, and stated that [illegible] man had been ill for five days, starting with sudden onset of vomiting and diarrhœa uncomplicated by high temperature All these symptoms had persisted without remission and had caused a great deal of anxiety on board The patient could no longer keep any food down and water only in small quantities Although very ill he complained of no pain but only of lack of appetite and general malaise There had been no other cases of this nature on board, the patient had eaten the same food as the rest of the crew and had not been ashore or bought anything extra such as fruit or beer

On examination, the patient was found to have a dry hot skin and heavily injected conjunctivæ The history he gave was similar to that told by the Captain, except that he had a persistent soreness in the upper part of his abdomen in addition to the other symptoms His temperature was then 103·5 F, pulse



full [illegible] of good volume The heart and lungs were normal and the abdomen was not rigid but somewhat tender in the upper left quadrant The right iliac fossa was clear No viscus was palpable at first but as a last resort the patient was asked to inspire as deeply as possible while the tender region about the left costal margin was palpated Right at the end of the inspiration a hard tender spleen came down and could be felt for three fingers' breadth This narrowed down the possibilities considerably and it now transpired that the patient had been on the far eastern run about three months previously and had had an attack of [illegible] on the China coast Just previous to the present illness he had been sleeping in damp and cold quarters owing to heavy weather If the original infection was malarial, then this by itself would be quite sufficient to cause a relapse

He was taken to hospital and treated for malaria pending further investigations Improvement was immediate, and after two days his temperature had dropped to

normal and the gastric symptoms had been relieved The blood smear showed no evidence of parasites but this unfortunately was not taken until after treatment had been initiated Nevertheless the diagnosis of malaria was probably correct, more especially as on discharge the tender spleen could no longer be felt

These three cases were all manifestations of an infection with the malarial parasite and they demonstrate the diversity of symptoms that can be produced as a result of such infection No examination of a patient in this sort of work is complete unless evidence of the specific and allied infections has been most carefully looked for

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TWO CASES OF PNEUMOKONIOSIS

By Surgeon Commander R W NESBITT M B F R C P I R N

(1) T C , aged 59 Skilled labourer This man was admitted to hospital in December with history of progressive weakness with cough and sputum, for six months past He had been getting short of breath, had lost weight and energy and was beginning to feel acutely ill

Past history Had served eight years in the Army and eight in the Reserve Never had any illness except 'common cold For the twelve years previous to his present illness, he had been an asbestos worker His " Asbestos Industry Workers Register showed that his lungs had been X rayed at R N Hospital Chatham on August 22, 1933, and found normal, and that he had been examined clinically in each of the three following years and passed as fit In the year 1933 the use of masks had become general among workers in this industry and the patient had been supplied with one which he had worn since that year Nothing relevant in the family history Father and mother 'died of old age '

On admission he was manifestly ill, and his physique appeared poor His chest was vaulted and expansion was diminished There was impaired resonance over the upper and middle lung zones on both sides and numerous crepitations and rales were audible in these situations He had a constant cough, with profuse mucopurulent sputum X ray examination showed advanced infiltration of the upper and middle zones of both lungs of tuberculous type Sputum examination revealed numerous tubercle bacilli and typical *asbestic bodies* He had intermittent pyrexia, and the sedimentation rate of the red blood cells was about 80 per cent At a special survey held shortly after admission his condition was found to be asbestosis with secondary tuberculous infection His condition improved under treatment in hospital but he was eventually invalided and transferred to the care of the local tuberculosis officer

Comment Points of interest are (1) his previous excellent health (2) absence of any familial tuberculous diathesis (3) comparatively rapid progress of his pulmonary lesions

Asbestosis is a comparatively rare condition at present but once established the liability to subsequent tuberculous infection is considerable In anthracosis, on the other hand, such a complication is rare this is probably because finely divided charcoal has the property of adsorbing tuberculin

(2) J L , aged 26 Stoker Admitted on October 28 complaining of (1) Breathlessness on exertion (2) cough and sputum for seven years , (3) substernal pain for two years

Previous history Had five years service in the Navy Before that had worked for four and a half years in an iron ore mine in Cumberland at the base During this time he noticed that he had frequent 'chest colds' and was often short of breath but was able to carry on His father died of silicosis (employed in the same mine) One cousin suffering from tuberculosis still alive

On admission, thin and pale acute clubbing of fingers chest asymmetrical and

moved evenly Sligh[illegible] lobe [illegible] chrome cough with [illegible]

X-ray examination [illegible] nothing over the whole l[illegible] lungs with suspicio[illegible] in middle zones Appearances were considered characteristic [illegible] Wassermann reaction was negative Sedimentation rate [illegible] Repeated sputum examinations failed to demonstrate the presence of tubercle bacilli His condition improved under treatment in hospital [illegible] was found unfit for further Naval service and was invalided and discharged home

Comment In all these cases the pulmonary lesions are similar to those of asbestosis there appears to be a tendency to bronchitis rather than tuberculosis as a sequela The [illegible] clear

It may be of interest to note that although in this patient there was a certain family history of tuberculosis he himself showed no evidence in his sputum, and his sedimentation rate was [illegible]

AN ABDUCTION SPLINT FOR THE UPPER EXTREMITY

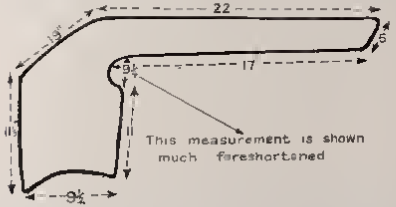
By Surgeon Captain J Colborne R N

This splint is light and comfortable It can be easily made and fitted

The material used is [illegible] in mild steel wire various gauges were tried, but this was found to be the most suitable, thinner gauges bent with the weight of the arm

The portion of the splint fitting the thorax should extend from the nipple line in front to about the midline behind and from the iliac crest below to the level of the axilla, with the arm extended to a right angle The portion of the apparatus for the arm and forearm should be covered with a flannel bandage to act as a support

Diagram 1 shows an oblique view of a splint made for the left side



The measurements given are a rough guide for a splint for an adult of average size but it is preferable to fit the splint to individual cases If accurately fitted it will be found that the splint almost supports itself Photographs show how the splint is padded how the straps may be arranged and modifications of the portion for supporting the forearm It has been found that patients can sleep in the splint

The splint may be used in cases of injury to nerves with concomitant loss of





function of the muscles supporting the shoulder girdle in relation to the upper end of the humerus. In cases of dislocation of the shoulder, associated with fracture of the greater tuberosity of the humerus, it is these the angle between the arm and thorax portion should be reduced from 90 to 40°



In cases of suppurative axillary adenitis associated with a sinus, the abducted position provides for better drainage and promotes more rapid healing.

The splints illustrated were made by the Hospital blacksmith. It is obvious that this splint can be easily made in one of H.M. Ships should the necessity arise.

PLANTAR WARTS

By Surgeon Commander J. Colborne, R.N.

In the writer's experience this is a rare condition in the Services, but when it occurs it almost completely cripples the patient.

The orthodox methods of treatment are numerous, and include the application of salicylic acid, sorbitive acids excision, stated to be often followed by recurrence, and finally radium and X ray therapy, which are said to be the most successful. These last two remedies are not available either afloat or in Naval Hospitals.

The writer has on occasion used the following unorthodox treatment. He must admit that the suggestion has been received at first with derision, but the results have been uniformly successful.

The ointment is a fresh [illegible] but [illegible] y until ds provided it is juicy

The patient is put to bed [illegible] and the sections mud outwards, are applied [illegible] d on This applica tion should be without [illegible] ity s and renewed twice daily

This reduces the sole of the [illegible] appears like think wet blotting paper The warts can [illegible] away with the point of a sharp knife The skin ruj [illegible] as the application is discontinued

A POWDER FOR RINGWORM

By Surgeon Commander J G Holmes M D R N

Lieutenant D I Patin (1938) of the U S Navy Medical Corps, has made an extensive study of the treatment of epidermophytosis and has at last found a powder which he claims is almost a specific for prevention and cure It fulfils the primary requirements of being simple and cheap to produce

One's attention was first drawn to it in an article in the *Lancet* of October 1 1938 page 786 Since then it has been tried out at H M S *St Vincent*, R N Barracks Portsmouth, and R N Hospital Haslar and it is considered that it well merits a place in one's armament against the distressing, if not very dramatic lingoid diseases of the skin

The formula is —

Salicylic acid	1 parts
Menthol	2
Camphor	2
Boric acid	50
Starch	30

It should be well rubbed into the affected parts thrice times a day

The only cases in which it appears to be of little use are those in which there is associated acute eczematoid ulceration

R J Flemyng

J r [illegible]pher Med Assoc August 20 1938 p 68)

THE "DICK TEST"

By Surgeon Commander C D Brownfield O B E R N

It is stated in the Medical Research Council's publication, Epidemics in Schools that after taking into consideration the comparative inability of scarlet fever to spread widely, and the somewhat unreliable results and the severe reactions resulting from antitoxin immunization, the advantages derived from this immunization are not sufficient to compensate for the labour and the disadvantages incurred during the process

It has been the custom at the Royal Naval College Dartmouth since 1931 to Dick Test all the new entries and to immunize those who gave a positive reaction Until 1934 Wellcome's method No I was employed for this immunization and since 1934 Parke Davis Streptococcus Toxin Scarlatina has been used, in two doses, each given with 2 c c mins of adrenalin

A general review of the results did very little to impress one as to the value of this immunization and on taking over medical charge of the College in January 1937 one found the whole process of testing and the subsequent immunization unpopular with the cadets their parents and the staff Medical opinion outside the Service seemed to be that the whole process was not worth while but it was pointed out that in a place such as this establishment where one could really

control the whole population one should have far better results than those obtained by a Medical Officer of Health dealing with a crowded and often hostile community.

At the beginning of each term the new contingent of fifty cadets is Dick Tested. The intradermal injections are given during the taking about which an hour to complete and the results are read 24 hours after the following injection. One finds that the positives average about 3 to 6 per cent of those tested. To immunize each of these boys are given a series of five injections at eight day intervals. This is the interval chosen so that in the event of the same cadet requiring more than once he does not miss the same day of the week's work each time. After a course the subject is again tested and it is seldom that a second series of injections is necessary. It is not often that the reactions are severe. A small number of cadets is excused from studies on the day following the injection and it has been necessary to place only three cadets on the sick list out of the 308 injections of Streptococcus toxin Scarlatina.

During the Easter Term 1938 46 cases of tonsillitis were admitted to the Sick Quarters. In each of these cases a rash was present, which in the vast majority of cases was scarlatiniform in character. All the cases were ruled out by the throat swab found to have a rash at the daily inspection. When admitted they all admit to a slight sore throat a short time before. In others the symptoms were quite minor. In every case at least two of the following, of scarlet fever sore throat strawberry tongue typical rash or pyrexia were present. All ages and symptoms had cleared up in an average of two days and there was no subsequent peeling. Hæmolytic streptococcus was isolated from the large majority of throat swabs. The patients remained in isolation an average of ten days sickness and there were no ill results attributable to the disease. A negative throat swab was insisted upon. The epidemic to all intents and purposes was over by the end of the term when the cadets dispersed to their homes. It was subsequently learnt that one cadet was stricken down with scarlet fever on his arrival home, two developed scarlet fever and one through escaping himself infected two members of his family with scarlet fever.

Of the thirty six cases forming the above epidemic six had originally been Dick Negative and had been immunized two were stated to have had scarlet fever and two were infected as their parents refused permission for the test to be carried out. The remaining forty six were Dick Negative. The disease was of a much modified form of scarlet fever occurring in Dick Negative cases and the proportion of artificially immunized patients contracting the disease is much smaller than that of those possessing a natural immunity. It is gratifying to see that the labour and time taken in carrying out the test and immunization are well justified by the practical results obtained.

RUBIAZOL: THE USE OF A NEW PRODUCT IN DENTAL PRACTICE

By Surgeon Lieutenant Commander DOUGLAS HALTON MACRAE, R.C.N.(R.D.), R.N.V.R.

The recent advent of the sulphamido compounds has been the most important advance in chemotherapy since the work of Paul Ehrlich. It has not been definitely established that effective chemotherapy of a microbial disease is attainable by chemical medicine this new field has been rapidly developed, and medical observers going from Ludwig's angina to pneumonia are responding to drugs of the sulphanilamide group. Those compounds include the azo dye sulphamido chrysoidine

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By kind permission of the *British Dental Journal*

[illegible] active [illegible] Report [illegible] of the [illegible] toler[illegible]ance and [illegible] of infestation [illegible] substances have [illegible] application in dentistry. [illegible] In general [illegible] the more [illegible] chemically less toxic [illegible] therapeutics for stomatology should [illegible] in small doses, and [illegible] purpose of this article is to [illegible] of an [illegible] general compound which [illegible] pleasant [illegible] product used was the carboxylic [illegible] (carboxy[illegible]phenyl azo 2, 4 diamino 6 [illegible] naphthol 1) [illegible] by the Roussel Laboratories [illegible] by Mietzsch and Klarer [illegible] by Domagk [3] in 1935. [illegible] ions of [illegible] by Levaditi and Vaisman [illegible] to 1936 the Prontosil [illegible] chrysoidine. This substance [illegible] a rich microbial activity and [illegible]

In dental practice the [illegible] streptococci of pathological [illegible] of the available literature [illegible] concerning the use of these [illegible] rapid arrest of Ludwig's [illegible] Palmer [7] confirmed the [illegible] this product in another case [illegible] in hypertrophic gingivitis. [illegible] several Continental writers [illegible] may be caused by the streptococcus [illegible] discovery of the azo dyes we [illegible] He quotes a case of dental [illegible] were done and a severe general [illegible] after three days' treatment with [illegible] abscess of the lower molar [illegible] 2 tablets daily were given [illegible] tooth was extracted and the patient [illegible] systematically uses the drug [illegible] there is any danger of septic [illegible] days before the extraction, and [illegible] He has not noted any post-operative [illegible] Heygers [10] points out that the [illegible] the treatment of soft tissues, and [illegible] substance in the treatment of the [illegible] He quotes clinical observations [illegible] in dental caries stops the extension of the lesion [illegible] enables the oral surgeon to avoid interference which is often [illegible] in the shell. Hanson [11] combines the observations of the above [illegible] regard to the use of rubazol in [illegible] practitioner and patient against the danger of complications [illegible] addition to acting as a curative agent.

During the past twelve months I have had occasion to use the compound in my practice along similar lines to those suggested by Cauhepe, both from

[illegible]

[illegible]

Correspondence.

HURT CERTIFICATES

TO THE EDITOR OF THE JOURNAL OF THE ROYAL NAVAL MEDICAL SERVICE

SIR,—The letter on this subject by Surgeon [illegible] appears to me to raise an interesting point, and one which on first consideration appears difficult to decide.

The loss of the finger must be regarded as [illegible] however much it may have been secondarily due to [illegible] rarely results in the loss of a finger while [illegible] do so. Hence I consider that the Hurt Certificate [illegible] loss of the finger should have been regarded as attributable [illegible] assessment for monetary compensation the circumstances [illegible] justify a smaller award than in an instance of a similar injury [illegible] was not present.

Surgeon Lieutenant Vincent Smith's letter does not establish [illegible] stage of syphilis resulted in the call for amputation. Might [illegible] condition supervening on the injury was a primary sore [illegible] justification for a Hurt Certificate would seem to have [illegible] confirmed, for the disease may have been freely caused by [illegible] injury, as in the case of a surgeon accidentally inoculating himself [illegible] though it must be admitted that this would be extremely unlikely [illegible] under discussion.

In conclusion I consider that—

(1) The Hurt Certificate should have been issued but that—

(2) A note should have been made subsequently on the [illegible] A pathological report stated that there were syphilitic changes [illegible] tissues of the amputated finger.

(3) The onus of assessment of the percentage of the [illegible] the Medical Officer who sees the man at the time of his [illegible] the Service and would, of course, be subject to Admiralty review [illegible] the full facts would be there for the assessing officers.

I am, Sir,

Yours faithfully,

W. H. Dent,

Surgeon Lieutenant, R.N.

A NEW TEST FOR GASTRO-INTESTINAL ULCERATION

TO THE EDITOR OF THE JOURNAL OF THE ROYAL NAVAL MEDICAL SERVICE

SIR,—In October 1938 my attention was drawn by [illegible] Chemical Excerpts to an article by Woldman (1938) [illegible] a test to demonstrate a lesion of the mucous membrane of the gastro-intestinal tract. The technique is to swallow 0·1 gram of phenolphthalein [illegible] a meal of bread and milk fasting. Nothing is taken by the mouth for [illegible] afterwards.

Urine is passed at two hours and four hours later and [illegible] for the presence of phenolphthalein, using 10 per cent sodium [illegible] as an indicator. The theory is that phenolphthalein will be absorbed [illegible] broken but not through intact mucous membrane and will appear [illegible]

The test was carried out in a series of cases of proved peptic ulcer [illegible] suitable controls at R.N. Hospital Haslar. It is regretted that my re[illegible]

were far [illegible] that the test had any value in the diagnosis of gastro intestinal dis[illegible] Nevertheless attention is drawn to it as others may wish to give it a trial

I am, Sir
Yours &c.,
J G Holmes
Surgeon Commander Medical Specialist
R N Hospital, Haslar

REFERENCE
Brit Journ Ind Med June 1938 p 241

LEAD POISONING

TO THE EDITOR OF THE JOURNAL OF THE ROYAL NAVAL MEDICAL SERVICE

SIR,—Now that a correspondence column has come into existence on your pages I should like to draw attention to two interesting letters, by Anderson and Lane respectively which appeared in the *British Medical Journal* for February 11 on the subject of lead poisoning These letters enhanced a case which had previously appeared in that Journal, and which had been diagnosed as one of lead poisoning on clinical and haematological grounds, and on a single examination of the urine in which there was found 0 1 mg of lead per litre of urine

Tompsett and Anderson have determined that 0 16 to 0 03 mg of lead may be found in the urines of normal persons, and the Ministry of Health's Departmental Committee has determined the average quantity of lead in the urine of normal persons at 0 04 mg per litre of urine, and varying considerably from day to day whether collected from faeces or urine '

As regards the punctate basophilia or stippling of red cells Lane states that One almost invariably finds in lead poisoning cocoits of over 10,000 stippled cells per million reds The case under criticism had only 70 stippled cells per million reds Two of our most trusted laboratory tests for lead poisoning have thus come under scrutiny

It has got been uncommon in the past for laboratories to report on a single urine specimen, ' lead present in urine ' or on a blood film, ' punctate basophilia present ' Surely something more specific than this should be required of the laboratory in the light of the above facts In chronic cases of lead poisoning there is much variation in the severity of the clinical symptoms, and colic and encephalopathy are now regarded as acute toxic manifestations due to a sudden liberation of lead into the blood-stream from the spongiosa of bones where lead is deposited as an insoluble triple phosphate It circulates in the blood as a colloidal phosphate its liberation into the blood stream being similar to that of calcium Finally the lead is excreted from the blood into the urine and faeces

An estimation of lead in the blood would therefore appear to promise the most accurate information and if the urine alone is estimated, the estimation should be a quantitative one made on several specimens and over a prolonged period As regards the stippling of red cells the laboratory report should record the number of stippled cells per million reds

One is tempted to reflect after reading these letters in the *British Medical Journal*, on the number of persons in H M Dockyard Establishments who suppose themselves to be the victims of lead poisoning on what now appear to be very insufficient data, and on questions of survey and compensation that arise therefrom It is hoped that such tests as are indicated above are not beyond the scope of our Service laboratories

I am Sir
Yours &c.,
February 12 1939 QUONDAM DOCKYARD SURVEYS

Reviews.

THE MEDICAL PRESS AND CIRCULAR 1839 1939 By Robert J Rowlette M D F R C P I Published at 8 Henrietta Street, London, W C 2 1939

This attractive volume should have a special appeal for the Naval Medical Service It records the history of a journal whose present editor is a Consulting Surgeon to the Navy, and one whose sympathy with the Service has extended far beyond the professional relations with its officers and men

Further, the book is a resume of the history of Irish Medicine to which the Naval Medical Service owes and has owed, so much

The first half of the book is the story of the *Dublin Medical Press* from its foundation in 1839 to the date of its incorporation with the *Medical Circular* in 1866 A chapter follows describing the *Medical Circular*—an English journal founded by James Yearsley in 1852 The rest of the book is devoted to the history of the combined journal from 1866 to the present day

Like most medical journals *The Medical Press and Circular* was engaged in controversy from its birth Its struggles on behalf of the Medical Profession and on behalf of the public was one that involved a battle of personalities within and without the medical world A war against bad sanitary conditions and quackery and all the public abuses of the time was not inconsistent with personal animus among the leaders of medical thought and rivalry between medical journals The new journal united the savage invective of the Irish periodical with the pompous complacency of the English journal and the editors laid about them on all and sundry with a vigour that must have delighted their readers They had had a worthy foe in Wakeley of the *Lancet* How salt spoken would have seemed Edmund Owen, the storm petrel of the practice or Ernest Hart, the subtle editor of the *British Medical Journal* to these robust gladiators

The record teems with great names—Graves, Stokes Colles, Jacob Wakeley and many others Excellent portraits of editors and proprietors show how resolutely the ship must have been handled to her voyage through very stormy seas The portraits of Arthur Jacob, Albert Tindall, and Harry Campbell are in themselves the story of the Journal's progress from sheer pugnacity to massive strength, and finally to the scholarly self confidence of established prestige

There are echoes of old scandals and *causes celebres*, and much that is absorbing, and still more that is stimulating Above all the littleness of individuals, and the pomposity which in Medicine at times sin stands out the greatness of those men who fought for good conditions and had no compromise with any action to the public harm

The motto Salus Populi Suprema Lex is safe in the hands of the Editors to day albeit upheld in more courtly phrase and built upon a broader base An excellent book!

W W K.

SYNOPSIS OF MEDICINE By H Lethelby Tidy M A M D, B Ch Oxon, F R C P Lond, Consulting Physician to St Thomas Hospital Seventh Edition, revised and enlarged 1939 Pp 1039 with index 1187 Bristol John Wright and Sons, Ltd London Simpkin Marshall Ltd Price 21s net

The Synopsis of Medicine is far too well known a volume throughout the whole Profession to require anything in the nature of a descriptive review Suffice it to say that the first edition was published in 1920 and there have been six editions since that date The aim of the book is to give in summary

the [illegible] probable and best known [illegible] house [illegible] manner that student may [illegible] rapidly and that [illegible] and examiners may refresh [illegible] chief details of medicine

Since [illegible] of the sixth edition [illegible] there have been great advances [illegible] knowledge of [illegible] vitamins, in our knowledge [illegible] of anæmia, and in [illegible] diseases. In instance regional [illegible] on these subjects have been extensively revised or written afresh. A notable omission from past editions has now been remedied, namely, a reference to the colon. Much has been added to the sections on tropical diseases: acute poliomyelitis, glandular fever, scabies, alkalosis, and on the treatment of peptic ulcers. Consequent affections of the heart, subacute bacterial endocarditis, the functions of the pituitary and the sequence of other have received special attention. There is new work on eczema and pyelitis, and also on the rheumatoid conditions. Among the new articles written for this addition there is an interesting section on the lymphogranuloma inguinale. The buccal cavity and mucous membrane receive fresh attention as do diseases of the colon and diseases of the larynx and trachea.

The author tells us that in the German translation of the sixth edition there are additions chiefly confined to treatment and these include a number of proprietary lines. Our own textbooks, he says, and even our pharmacopœia are greatly lagging too far behind the advances of synthetic chemistry, and the fear of advertising a particular brand should not in future bar the mention of such preparations of established value.

Altogether about forty pages have been added to the text, and the index now occupies eighty-seven pages.

Considering the huge amount of matter contained in this volume, it is compact and easily handled, the arrangement is very convenient, and the print good. As a book of reference it could not be surpassed, and no practising physician should be without it on his bookshelves. In the Royal Navy, the Synopsis is already too well thumbed a reference book to require further comment or elucidation.

J. G. D.

Carbon Monoxide Asphyxia. By Cecil K. Drinker, M.D., D.Sc., Professor of Physiology and Dean, School of Public Health, Harvard University. First Edition, 1938. Pp. 278, with 21 tables and 40 figures. Published by Oxford University Press, London. Price 20s. net.

This is a monograph intended for those who have to deal with workers in conditions in which carbon monoxide is a live problem. In the Navy these conditions do not obtain generally, but they arise sometimes in connection with those working in bilge compartments and other places which have remained closed for long periods and also in spaces where internal combustion engines are in use. These are part of the work a day life of most of the world to-day.

The author starts by reviewing the respiratory physiology and blood chemistry, with notes on investigations by previous workers. He then deals with the pathology, and discusses what constitutes harmful exposure to and common sources of, carbon monoxide. In the chapter on chronic exposure he emphasises that carbon monoxide is not a cumulative poison, but on the contrary, that a certain amount of acclimatization takes place.

The chapter on treatment is very complete and practical. It points out the great importance of combining carbon dioxide with oxygen inhalations, and also stresses the possibilities of alcohol, opium or other drug as complications, especially in attempted suicides. He summarises the treatment under four headings —

(1) [illegible]
rapidly [illegible]
(2) [illegible]
measure [illegible]
(3) [illegible]
in deep [illegible]
(4) [illegible]
[illegible]
in the [illegible]
[illegible]
complete [illegible]

[illegible]
[illegible]
[illegible]

said to the first place that these plates are excellent and are more valuable to the student in search of diagnosis than any verbal description

This book is concise and not intended to be a book of reference nor, as Dr Kinnear says has he made any attempt at an exhaustive review of Dermatology This makes the book all the more welcome to the reviewer who is still well aware of his ignorance of this most difficult subject

After an introductory chapter dealing briefly with the anatomy and pathology of the skin, and a brief review of the various methods of treatment there follow thirteen chapters in which the dermatoses are classified under their known or unknown causes, as the case may be

A few useful prescriptions are given to a short appendix and a close scrutiny of these shows that for all practical purposes they cover a very wide field of treatment for the various lesions we are likely to meet in practice

On the subject of Scabies we read on page 80 that "where complete control over the patient his immediate contacts and his clothing is possible as in the Army or an institution the traditional sulphur treatment is probably the most efficacious We regret that the author has not mentioned the Scabet Service or its treatment although his remarks on the following page have tempered our regret, for he adds "AS A MATTER OF FACT I SELDOM USE THIS TREATMENT Nor do we The modern benzyl benzoate treatment has converted the average twenty one days hospitalization for sulphur dermatitis, subsequent to the murder of the parasites, into a twenty four hours complete cure

The treatment of a hard corn by a paint of salicylic acid collodion and tr cannabis indica, as advocated on page 205 has not in our experience been of anything but temporary value and we should like to hear of some permanent remedy for those who suffer from dry skins and hard corns

The chapter on the toxic dermatoses makes interesting reading We have observed good results with the sanocrysin treatment of lupus erythematosus in some cases, but in by no means all The last is we know very little about it And we must agree with Dr Kinnear's last paragraph on page 128 which could be applied to more skin diseases than eczema all we can do at present is to help to let the disease wear itself out Perhaps this remark should also be permitted outside the realms of Dermatology

A very readable little handbook

C I S

REPORT OF THE HEALTH OF THE NAVY FOR THE YEAR 1936 H M Stationery Office Price 2s 6d

This report is produced on the familiar lines of its predecessors but its appearance in 1939 though doubtless unavoidable must detract somewhat from its interest However, it is satisfactory to see that the health of the personnel has been maintained in spite of the concentration of the Fleet in Eastern waters for a large part of the year

Compared with 1935 and the previous quinquennium the incidence of disease and injury was less but the invaliding rate showed a slight increase Once again pulmonary tuberculosis headed the invaliding list, followed by diseases of the nervous system and injuries and refractive errors of the eye The death rate exceeded the low records of 1931 and 1935 by 0 42 and 0 04 per 1,000 respectively but was below the average for the previous five years Injuries among which motor accidents predominated the pneumonias, and pulmonary tuberculosis were the principal causes of mortality

The average number of men daily sick showed an increase of 1 37 per 1 000 over the record low figure of the previous year Though there was a fall in syphilis cases, this was more than offset by an increase in the incidence of gonorrhœa estimated in nine years the loss of efficiency due to these diseases was 246 compared with 226 in 1935

Possibilities and [illegible] the infection [illegible] but the amount of sickness [illegible] by no means [illegible] the probable extent of [illegible] to the table of [illegible] illnesses we find [illegible] occupying the first place in their respective [illegible] a trivial complaint to which it is easy to be fraught with [illegible] by its neighbours [illegible] and is the reverence for [illegible] only when [illegible] that it becomes a [illegible] With [illegible] knowledge of [illegible] social intolerance [illegible] this inconsistency and to deprive scarlet fever of its [illegible] label.

The remarks in [illegible] are interesting and will give the reader some insight into the various activities of the R.N. Medical Service and of some of the problems with which it is called upon to deal.

The extensive and varied list which is made of the laboratory is shown by the table on page 30 the [illegible] number of biochemical investigations and blood counts is a remarkable [illegible] of the work of this department.

The poor dental state of the civilian population is reflected in the number of otherwise fit recruits who [illegible] the very moderate dental standard required for entry, owing to the premature loss of many teeth and to the large volume of work necessary in the training establishments and depots to render them dentally fit.

A. E. M.

Modern Treatment Year Book 1939. Edited by C. P. G. Wakeley, D.Sc., F.R.C.S., F.R.S.E., L.V.C.S., L.R.C.S. (Edin.). Published January 1939. Pp. xii + 365. 109 illustrations. London: Bailliere, Tindall and Cox. Price 12s. 6d.

This is the fifth volume in the Modern Treatment series which has firmly established itself as an Annual to [illegible] which the title has been changed to Modern Treatment Year Book 1938 and [illegible] successive volumes will appear under this title with the date of [illegible]. These volumes are so well known and have received such wide acceptance that it is almost superfluous to reiterate their value and usefulness to the general practitioner. A wide range of subjects is covered, each being presented with [illegible] and [illegible] by those who have a claim to speak with authority. The book is not [illegible] but up to those who desire to keep abreast of modern methods of treatment. The [illegible] given and therapeutic methods advocated can be applied with full confidence. The book serves the purpose of a [illegible] refresher course and can be heartily recommended.

H. F. B.

The Student's Handbook of Surgical Operations. By Sir Frederick Treves, Bart., revised by Cecil P. G. Wakeley, D.Sc., F.R.C.S. (Eng.), F.R.S. (Edin.), &c., Surgeon to King's College Hospital, Director of Surgical Studies and Teacher of Operative Surgery, King's College Hospital Medical School, &c. Sixth edition, revised and enlarged. January 1939. Pp. xii + 246. 245 illustrations. London: Cassell and Co. Ltd. Price 12s. net.

A new edition of this excellent little book is welcome. The Editor has preserved its original style and form. The older types of operations which have become only of historic interest, have given place to those which are newer. These include among others those on the brain and spinal cord, the sympathetic nervous system and the various forms of osteotomy and arthrodesis. A considerable increase in the number of pages has been unavoidable. The text figures have been revised and augmented. The practical details of how operations should be performed have always been one of the characteristics of this valuable handbook and as a book of reference for the essentials of surgical operations it has no rival. We very strongly recommend the work.

H. F. B.

A Concise [illegible] By [illegible] G Hebart Ph C [illegible] of the [illegible] Westminster Hospital [illegible] Pharmac[illegible] West[illegible] Hospital [illegible] Medicine [illegible] G Melton M P M R C [illegible] Registrar Westminster Hospital [illegible] Edition [illegible] London Leonard Hill Ltd Price [illegible] net p[illegible]

This [illegible] of the more important drugs used in the British [illegible] United States of America is both a unique and original [illegible] subject and is planned primarily for the student [illegible] has been the aim of the authors and their [illegible] of detail into such a small compass is [illegible] as the result of experiment and [illegible] safeguards against mistakes and a knowledge [illegible] is invaluable Some useful prescriptions are [illegible] proprietary medical products has been mentioned for [illegible] with, or similar to the drug under discussion [illegible] with an asterisk The whole book is [illegible] original term The work can be recommended [illegible] students nurses and pharmacists but also to [illegible]

H F B

[illegible] By A G Timbrell Fisher, M C, M B, Ch B [illegible] on to the St John Clinic and Institute of [illegible] Rheumatic Unit St Stephen's Hospital (L C C) [illegible] of the Royal College of Surgeons of England [illegible] Manipulative Surgery 1949 Pp 265 [illegible] illustrations London H K Lewis and Co Ltd Price 12s 6d net

This monograph [illegible] revised and [illegible] written with [illegible] of new chapters [illegible] Osteopathy and The Prevention [illegible] and [illegible] illustrations The attitude of apathy and [illegible] of surgery is less in evidence [illegible] it was a few [illegible] The specialists within our ranks are now [illegible] of [illegible] though the special skill of [illegible] miraculous

[illegible] this book [illegible] to take an increasing [illegible] important [illegible] only to the recovery of [illegible] opposition to the [illegible] of the osteopath and bonesetter [illegible] be based [illegible] dangers [illegible] trained in anatomy pathology [illegible] skill in manipulative work [illegible] learned from books or by [illegible] narrow margin between [illegible] Careful selection [illegible] indicated the method and [illegible] and the care in after treatment [illegible] for success in this difficult and [illegible]

In [illegible] the subject is evolved in a [illegible] and simple to understand The indications [illegible] contra-[illegible] clearly stated excellent illustrations [illegible] supplied

We are [illegible] the continued production of this excellent book [illegible] brought in placing in the hands of the [illegible] of surgical practice [illegible] of considerable conte[illegible]

[illegible]

TEXTBOOK OF MEDI[illegible] D. M. Ó[illegible] 1939. Pp. [illegible] Livingstone [illegible]

[illegible]

[illegible] considered that at least the [illegible] servant [illegible] is mentioned personally one obtains much better [illegible] heat to the throat externally and internally, and all [illegible] its own

[illegible] medique which did not appear in previous [illegible] clear and reasoned exposition of a subject which is of the [illegible] in general practice

Dr [illegible] his excellent collaborators are to be congratulated on this compact [illegible] textbook

J G H

Notes on Sanitary Science and Law C F White, M B, Ch B, D P H, D T M, Medical Officer of Health City of London formerly Medical Officer of Health Port of London Assistant Medical Officer of Health, Port of Liverpool Assistant Lecturer in Sanitary Science University of Liverpool, Medical Officer Ministry of Health Revised by Wm Hanna, M A M D D P H formerly Deputy Medical Officer of Health, City and Port of Liverpool, Lecturer in Public Health Administration, University of Liverpool Third edition published in 1937 Loudon Bailliere, Tindall and Cox Price 5s

This little book, containing of approximately 350 pages was first published in 1926 and was revised in 1935

It has been found necessary to revise the book again, owing to the rapid advance in Public Health Administration and Law, during the past few years

The section on Sanitary Law and Administration has been completely re written The most recent legislation in Public Health, Housing, &c has been referred to The main provisions in the new Act with reference to Food and Drugs have been dealt with Extracts from various Acts of Parliament, &c, have been made

The book should prove useful to those reading for D P H and Sanitary Inspectorships and to Medical Students generally S B

Fifty Years of Synthetic Pharmaceutical Research (Bayers)

It is no part of the policy of this Journal to take special notice of the products [illegible] engaged in the manufacture of drugs for commercial profit but there has [illegible] been published by Bayers a handsome brochure which marks the jubilee of their house It was in 1888 that the firm of Bayers made their momentous decision [illegible] up the manufacture of synthetic drugs in addition to that of synthetic [illegible] Some of their first products in this line were the results of synthetic experi [illegible] dyes So closely have the firm been associated with the epoch making [illegible] marks in therapeutic development during the last half century more especially [illegible] in tropical medicine that the brochure becomes a fascinating history of [illegible] senior of team work of exact scientific knowledge of perseverance with good judgment (sometimes hitting on the exact formula by accident during experimental research) and finally of triumphant success

Lastly by Tidy in the preface to his new seventh edition of the *Synopsis of Medicine* refers to the German translations of his work It is interesting to note he says the number of proprietary drugs that are included Our own textbooks and even our Pharmacopoeia, are possibly lagging too far behind the advances of synthetic chemistry and the fear of advertising a particular brand should not to future be the mention of such preparations of established value

Phenacetin and aspirin were the first synthetic products of the firm, and these were quickly followed by sera particularly anti diphtheritic serum (Behring) After these early efforts there are passed in review in this brochure the romance of the researches on salvarsan and neo salvarsan, stebrin prontosil and now uleron, hormones such as suprarenin and prolan, vitamins like the first synthetic

ually prepared vitamin [illegible] drugs like camphor [illegible] of tropical medicine, ge[illegible]205) for hypnanes[illegible] leishmaniasis, plasmo[illegible]e blue, yaws, and [illegible] impressive array

The firm have always [illegible]e painstakingly careful to [illegible] products on the general [illegible] they have been thoroughly [illegible] in the laboratory and in the clinical field. With these objects scientific staff have constantly sought and generally obtained [illegible] collaboration of the smoothie medical world, more especially in tropical

As our contemporary the *Indian Medical Gazette* remarks [illegible] exaggeration to say that the preparations that originate in these [illegible] have altered the whole outlook of tropical medicine

The brochure, apart from being a highly informative productio[illegible] described as a panorama of the advances in curative medicine through [illegible] half century

News of the Service

ADMIRALTY ORDERS

3130 — Novatox: Local Anesthetic

(M D G 1041/38.—15.12.38.)

Ampoules of "Novatox" local anesthetic issued in H.M. ships are to be [illegible] those bearing a batch number [illegible] 1761 or [illegible] that number [illegible] and ampoules known to be of a higher batch number. The [illegible] on the label of each box.

2. Ampoules of the type of which samples [illegible] and [illegible] should be [illegible]

3. Stocks at R.N. hospitals are also to be examined [illegible] those containing ampoules of a lower batch number than stated together with those [illegible] should be forwarded to the R.N. Medical Depot, Haslar, Gosport, Hants.

3284 — Buckets, Pattern 100, for Dental Surgery

(N.S. 1314/38. 3.11.1938.)

One bucket, W.I. enamelled, Pattern 100, will be allowed [illegible] each [illegible] surgery is fitted [illegible] addition to the bucket of the spittoon [illegible] all [illegible]

2. Ships concerned are recommended, when necessary, to [illegible] yards accordingly. Supply to ships [illegible] should [illegible] yards.

3. B.R. 958—Establishment of Naval Stores for Various Purposes—W.H. [illegible]

55 — Form M 40: Abolition of Dial Sheet

(Stn. 2813/38. 9.11.1938.)

The following has been abolished:

Form M 40, Dial Sheet.

The remaining sections of the form are to be attached and used [illegible] by the abolition of the Dial Sheet.

123 — Form S 446: Medical History Sheet: Amendment

(N. Stn. 1318/38. (1).—12.1.1939.)

Note (2) at the foot of the section [illegible] of the Medical History Sheet, Form S 446, is amended to read as follows:—

"(2) In cases of injuries [illegible] *other than those arising in the line of duty* [illegible] Certificate has been issued [illegible] the following [illegible] date of issue."

Form S 446 [illegible] amended accordingly.

214 — Medicines, &c., for the Service Afloat — Addition to Scale

(M.D.G. 1092/38.—19.11.1938.)

The addition of the following articles to the scale. They will be stored for [illegible] medical officers in whose case they have been approved:

Tabellæ Acidi Acetylosalicylici Gr. 5 (aspirin tablets) [illegible]

Ophthalmic Test Solution Cocaine Hydrochlor. gr. 1/40 [illegible]

The latter tablets are to be kept in the custody of the Commanding Officer and [illegible] all tablets administered must be entered on Form M 177a.

217.—Medical History Sheets for the Reserve Fleet Supplementary Party—Issue

(M D G 11830/38.—19.1.1939.)

Application should be made to the Medical Director-General for the original Medical History Sheet of all ratings serving in or discharged from the Reserve Fleet Supplementary Party. The Medical History Sheets will relate to the Medical Director-General. The original Medical History Sheets are to be the case of ratings who went to pass a medical board [illegible] years ago.

218.—Flying Personnel—Dental Records

(M D 1 11181/38.—C.I. 1349.)

[illegible] to [illegible] paragraph 1 are to be sent to the Naval Dental [illegible] examination of [illegible] and that dental records [illegible] Dental Officer, [illegible] Medical Board. [illegible] Details of [illegible] Medical Boards are to be forwarded to the Medical Director-General [illegible] Medical Boards [illegible] ratings [illegible] Medical Boards [illegible] the Medical Board [illegible] dental records [illegible] with the medical [illegible] Form M.(R.A.).

462.—Professional Examination for Warrant Wardmaster January 1939—Result.

(M D G 11270/38.—28.1.1939.)

The following result was obtained at the Royal Naval Hospital, Haslar, on January 19, 1939:

				Marks								
				Part I.		Part II.			Part IV.		Total	
Name.	Age.	Last Appointment.		Anatomy.	Physiology.	Hygiene.	Pathology.	Bacteriology.	Pharmacy.	Nursing.		Result.
				200	200	200	150	50	100	100	900	
[illegible]	[illegible]	Medical Director, [illegible]		184		153	83	71	88	71	477	651	Passed.
[illegible]	[illegible]	Medical Officer, [illegible]		167	80	103	98	118	89	83	484	640	Passed.
[illegible]	[illegible]	Medical Officer, [illegible]		153	[illegible]	140	95	100	81	96	477	639	Passed.
[illegible]	[illegible]	Medical Officer, [illegible]		148	[illegible]	100	98	100	[illegible]	[illegible]	457	[illegible]	Passed.
[illegible]	[illegible]	Medical Officer, [illegible]		[illegible]	12	100	90	88	[illegible]	6	377	574	Passed.
[illegible]	[illegible]	Medical Officer, [illegible]		130	27	0	40	5	[illegible]	11	323	511	Failed.

745.—R.N. Hospital, Port Edgar, Opened.

(N.I. 135/39.—11.8.1939.)

[illegible] Hospital, [illegible] Port Edgar, [illegible] Mail [illegible] for the Hospital should be addressed [illegible]

[illegible] Medical Officer in charge
R.N. Hospital
Port Edgar
South Queensferry
West Lothian

[illegible] Telephone Number

747 S 1246L—Sick Berth Rating's History Sheet

[illegible]

OBITUARY

[illegible]

and served [illegible] *Gauger* in 1903 and [illegible] employed on dental duties. In 190[illegible] H.M.S. *Hospitable* [illegible]. His first and only hospital billet [illegible] in 1910. He [illegible] when the War [illegible] 1914 he joined H.M.S. [illegible] during the great [illegible]. He was placed on the R[illegible] in 1922 and [illegible] his charge. [illegible] November 20, 1938.

Surgeon [illegible] Tomlinson (Retd.) [illegible] York [illegible] educated at Leeds [illegible] the late [illegible]

He entered the S[illegible] H.M.S. *Imogene* [illegible] went to H.M.S. [illegible] H.M.S. *Pegasus* on the [illegible] He served [illegible] the War [illegible] He was [illegible] and [illegible] the battle [illegible] [illegible] He [illegible] April 1918 [illegible] [illegible] always remember [illegible] and think of him with [illegible] sympathy [illegible]

He died [illegible]

Surgeon Captain [illegible] 1882 [illegible] educated [illegible] St. Thomas' Hospital [illegible] R.N. College [illegible] New Zealand [illegible] H.M.S. [illegible] the Mediterranean [illegible] H.M.S. [illegible] Haslar [illegible] He was promoted to the rank [illegible] H.M.S. [illegible] October 1 1920 [illegible] [illegible] North Wales living [illegible] He died [illegible] on December 12 [illegible]

BIRTHS

[illegible] Surgeon [illegible] J. A. Page, R.N. [illegible]

RETIREMENTS

[illegible] J. Bowman, C.B., M.B., K.H.S., placed on the retired list [illegible]

[illegible] J. F. Clark, M.R.C.S., L.R.C.P., D.O.M.S., placed on the retired list [illegible] 1939.

PROMOTIONS

[illegible] W. H. Edgar, O.B.E., M.B., B.S., to be Surgeon Rear-Admiral [illegible]

[illegible] H. Hayes, M.B., Ch.B., D.P.H., to be Surgeon Captain [illegible]

[illegible] J. A. Maxwell, O.B.E., M.B., B.Ch., F.R.C.S.Ed., to be Surgeon [illegible] 1938.

Surgeon Commander (D) [illegible]
Surgeon Captain (D) [illegible]
Surgeon Lieutenant-Commander [illegible]
Surgeon Commander James [illegible]
Surgeon Lieutenant-Commander [illegible]
January 16 1940
Surgeon Lieutenant-Commander [illegible]
February 19 1939
Surgeon Lieutenant-Commander [illegible]
Surgeon Commander [illegible]
Surgeon Lieutenant-Commander [illegible]
March 2 1940
Surgeon Lieutenant [illegible]
Lieutenant-Commander [illegible]
Surgeon Lieutenant-Commander [illegible]
December 16 1938
Surgeon Lieutenant [illegible]
Commander January 1 1940
Surgeon Lieutenant [illegible]
March 6, 1939.

TEMPORARY PROMOTION

Surgeon Lieutenant-Commander Hugh Mason Willoughby MB [illegible] DTM&H RNVR has been promoted to Deputy Medical Officer Health Authority Medical Department of Almoners and Medical Staff London Isolation Hospital on March 10 1940.

APPOINTMENTS

DECEMBER 1939

Surgeon Commanders T A Cochrane MB CM to *Royal Arthur* A Shaw MB [illegible] RCSI RN Barracks Portsmouth (for duty in connection with Anti-Aircraft Defence)

Surgeon Lieutenants G H C Ritchie MB BS [illegible] MB [illegible] to *Marlborough* D A Allsopp MRCS LRCP to *Enchantress*

Surgeon Lieutenants (D) R S [illegible] LDS to RN Barracks Chatham W R [illegible] LDS to *Ark Royal*

JANUARY 1940

Surgeon Rear-Admirals O F Sym [illegible] FRCS LRCP to RN Hospital Plymouth W H Edgar O B E MD to RN Hospital Malta

Surgeon Captain H R E Hall MRCS LRCP to RN Barracks Chatham

Surgeon Commanders R B McVicker MRCS LRCP to *Europa* L I Sage MB BS to *Benbow* R W Musson MD BCh MRCP to *Ramillies* M C S LRCP to *Penelope* F J B Weekes MB ChB to Naval Hospital Plymouth (Specialist) N E McMillan to Shotley MB [illegible] to *Victory* (for Signal Duties) and for HMS *Excellent* (Gunnery School) Portsmouth (Specialist) D S Prentice MB MRCP RNVR to *Curlew*

Surgeon Lieutenant-Commanders R L Clave FRCS LRCP to Naval Hospital Plymouth FRCP&S to *Indefatigable* H A Clarke MRCS LRCP to RN Hospital Chatham (and as Ophthalmic Specialist) I A Lawson MB [illegible] F D Finn MB BCh to RN Barracks Devonport (and as Ophthalmic Specialist)

Surgeon Lieutenants S F Cooke MB BCh to *Curacoa* H M K Kwok MRCS LRCP to *Argus* K Dutton Smith MB MRCS LRCP DPH [illegible] J D C Lewis MB ChB to *Berwick* [illegible] R Norsworthy MRCS [illegible] *Training Ship* (for Ships duties) and for HMS *Excellent* (Gunnery School) Portsmouth (Specialist) [illegible] MRCS LRCP to *Glorious* [illegible] H Dalby MB ChB to *Gloucester* [illegible] J O'Rorke MB [illegible] to *Cornwall* A Cecil MB ChB [illegible] [illegible] Lush MB ChB [illegible] S [illegible] S Thorne ME ChE to *Curacoa* [illegible] L Rudkin MRCS LRCP to *Exeter* C G Hunter MB BS, lent to New Zealand Division for period of Hostilities [illegible]

Surgeon Lieutenants (D) D D Craig BDS to *Illustrious* R W [illegible] S [illegible] *Ramillies*

PROMOTION

Surgeon Captain F Mashiter [illegible] MRCS LRCP RN [illegible] [illegible] to Naval Hospital Plymouth and as PMO Shotley Establishment (Additional)

Surgeon Captain C D G Fergusson MRCS [illegible] to RN Hospital [illegible]

Surgeon Commanders F F Fitzmaurice [illegible] CS [illegible] to [illegible] [illegible] MB [illegible] to *Royal Sovereign* (and as Specialist MO) G L Ritchie MC MB ChB [illegible] [illegible] W Woodhouse MRCS LRCP [illegible] RN Hospital Chatham (and as Surgical Specialist) [illegible] Surgical Specialist and for general duties in Shotley Establishments Ireland H W Higgins MB BCh DLO to RN Hospital Chatham (and as Surgical Specialist) J F H

[illegible]

ENTRIES

[illegible]

WARDMASTERS

[illegible]

[illegible] Hospital Malta
[illegible] Hospital Port Edgar
[illegible] RN Hospital [illegible]
[illegible] RN Hospital Haslar
[illegible] RN Sick Quarters [illegible]

ROYAL NAVAL VOLUNTEER REserve

APPOINTMENTS (TRAINING)

December 1938

[illegible] Lieutenant J N Maitland to Cornwall
[illegible] Surgeon Lieutenant I B Snedden to *Royal Sovereign*

January 1939

[illegible] Commander L C D Irvine to RN Hospital Haslar
[illegible] Surgeon Lieutenant A A G Clarke to *Iron Duke* M W [illegible]
[illegible] A B Semple to *Iron Duke* I Steers to RN Hospital Chatham
[illegible] Surgeon Lieutenant (D) W O Kendrick to RN Hospital Haslar

PROMOTIONS

Surgeon Lieutenant Commander (D) C H A Eade to RN Barracks Chatham
Surgeon Lieutenants R F B Leppett to [illegible] H F Rylance to RN Hospital Haslar

Probationary Surgeon Lieutenants J I Faull to RN Hospital Haslar H I Bell to RN Hospital Chatham P A I Bell to RN Hospital Chatham

RESIGNATIONS

Surgeon Lieutenant Commander C Sealey resigned December 31 1938
Surgeon Lieutenant Commander R A I Gordon resigned February 1 1939
Surgeon Lieutenant Commander (D) C I Cladd resigned December 13 1938
Surgeon Lieutenant W H Thomas resigned January 25 1939
Surgeon Lieutenant I S Mitchell resigned January 31 1939

ENTRIES

Mr H E Jackson M R C S L R C P entered as Probationary Surgeon Lieutenant [illegible] to Drake November 1 1938

Mr C G R Wraith M B Ch B entered as Probationary Surgeon Lieutenant and Lieutenant Morsey October 21 1938

Mr P Donovan M B Ch B entered as Probationary Surgeon Lieutenant and Lieutenant Scottish Division Mersey December 13 1938

Mr M W Hume L M S S A entered as Probationary Surgeon Lieutenant [illegible] to [illegible] November 30 1938

Mr I B Semple M B Ch B [illegible] entered as Probationary Surgeon Lieutenant and Lieutenant Sussex Division November 30 1938

Mr J W V Barkworth M B Ch B entered as Probationary Surgeon Lieutenant [illegible] to [illegible] November 30 1938

Mr W J Mc Mr M B B Ch entered as Probationary Surgeon Lieutenant [illegible] Drake November 1938

Mr R I K—by M R C S L R C P entered as Probationary Surgeon Lieutenant and Lieutenant Scottish Division December 8 1938

Mr I W [illegible] M B Ch B entered as Probationary Surgeon Lieutenant and Lieutenant [illegible] January 1939

Mr W [illegible] Ian M B B S M R C S L R C P entered as Probationary Surgeon Lieutenant [illegible] and Lieutenant Sussex Division December 1938

Mr [illegible] I [illegible] M B B M B Ch B entered as Probationary Surgeon Lieutenant and Lieutenant [illegible] to [illegible] January 30 1939

Mr R I [illegible] B M B Ch entered as Probationary Surgeon Lieutenant and Lieutenant [illegible] 1938

Mr [illegible] M Mc Nicholl M B Ch B F R C S entered as Probationary Surgeon Lieutenant and Lieutenant [illegible] 1938

Mr [illegible] H [illegible] M B Ch B entered as Probationary Surgeon Lieutenant and Lieutenant [illegible] 1938

Mr R M Metcalfe M B Ch B entered as Probationary Surgeon Lieutenant with seniority antedated 11 March 1937 and appointed to Lion Sussex Division

Mr W [illegible] M B Ch B entered as Probationary Surgeon Lieutenant and Lieutenant Morsey December 8 1938

Mr [illegible] M R C S L R C P entered as Probationary Surgeon Lieutenant and Lieutenant January 26 1939

[redacted] entered as Probationary Surgeon [redacted]

[redacted] entered as Probationary Surgeon [redacted]

TRANSFERS

[redacted] transferred [redacted]

[redacted] P M Fuller transferred from List I Clyde [redacted]

[redacted] der A Elliott transferred [redacted] tion to [redacted]

[redacted] der J I Cox J D Sumpter [redacted] transferred [redacted]

[redacted] J I M Curtis transferred [redacted]

[redacted] M I Biddle N A Vernon and [redacted] transferred from [redacted]

[redacted] A D Petre O J Vaughan J K [redacted] M H Mowatt and [redacted] to List I London District

PROMOTIONS

[redacted] Oldham M B L R C P F R C S and R Wish M B B S [redacted] to be Surgeon Commander 1 December 31 1936

Surgeon [redacted] Jones to be Surgeon Lieutenant-Commander November 30 1938

Surgeon [redacted] Lendrum to be Surgeon Lieutenant-Commander December [redacted] 1938

Surgeon [redacted] R I Webster to be Surgeon Lieutenant-Commander December [redacted] 1938

Surgeon Lieutenant P M Ogden to be Surgeon Lieutenant-Commander December 31 1938

Surgeon Lieutenant K F L Yeats to be Surgeon Lieutenant-Commander October 28 1938

Surgeon Lieutenant I M Scott confirmed in rank November 5 1937

QUEEN ALEXANDRA'S ROYAL NAVAL NURSING SERVICE

Miss Edna Nellie Gargate Gill entered as Nursing Sister (on probation) and appointed to R N Hospital Plymouth February 28 1939

Miss Vera Edna Myrtle Bowers entered as Nursing Sister (on probation) and appointed to R N Hospital Chatham March 1, 1939

APPOINTMENTS

Matron Miss M Goodrich to R N Hospital Haslar (on expiration of F S L from Hong Kong)

Superintending Sister Miss J K Gilhanders to R N Hospital Port Edgar March 1939

Superintending Sister Miss H Price to R N Hospital Haslar January 1939

Superintending Sister Miss G B Martin to R N Hospital Chatham February 1939

Nursing Sister Miss L Tang to R N Hospital Malta February 1939

Nursing Sister Miss M A S Walsh to R N Hospital Haslar (on expiration of F S L from Malta)

Nursing Sister Miss L K Prichard—appointment to R N Hospital Hong Kong cancelled

Nursing Sister Miss E S M Delahey to R N Hospital Hong Kong February 1939

Nursing Sister Miss L A L Rollin to R N Hospital Hong Kong, March 1939

Nursing Sister Miss H B Duffy to R N Hospital Chatham (on expiration of F S L from Hong Kong)

Nursing Sister Miss I C R Kempson to R N Hospital Chatham February 1939

Nursing Sister Miss F M Williamson to R N Hospital Port Edgar March 1939

Nursing Sister Miss T J Lee to R N Hospital Plymouth March, 1939

Nursing Sister Miss M E Coulton to R N Sick Quarters Shorley March 1939

Miss I K Drake to R N Hospital, Chatham March 1939

Miss M M F Duffy to R N Hospital Port Edgar March 1939

PROMOTIONS

Superintending Sister Miss M Goodrich to be Matron January 14, 1939

Nursing Sister Miss G B Martin to be Superintending Sister January 14 1939

RESIGNATIONS

Matron Miss N E James R R C invalided January 14 1939

Nursing Sister Miss E M Blair resigned October 10 1938.

Nursing Sister Miss N Bryce resigned March 9 1939

NAVAL MEDICAL COMPASSIONATE FUND

Account of Receipts and Payments for the year ending December 31, 1938

	£ s. d.	£ s. d.
Balances at Bank on January 1, 1938 —		
Deposit Account	115 2 11	
Current Account	104 1 [illegible]	
		222 1 1
Investments at 2½% Consolidated Stock	265 0 0	
Investments at 3% Conversion Stock	1 10 1	
Investments at 2½% Consolidated Stock	34 0 4	
Investments at 3½% War Loan	15 15 0	
		316 5 5
[illegible]		11 18 6
[illegible]		
[illegible]	11 18 1	
[illegible]	[illegible]	
[illegible]	1 1 0	
[illegible]	1 1 11	
		13 19 0
[illegible]		11 3
		£868 16 6

	£ s. d.
Awards to Orphans and Widows	581 0 0
Secretary's Allowance	16 10 0
Auditor's Fee	1 1 0
Cheque Book	5
Subscriptions Outstanding and Transferred to Donation Account	0
Balances at Bank on December 31, 1938 —	
Current Account £285 8	
Deposit Account 101 11 10	
	387 11
	£868 16 6

I [illegible] the above Cash Balance Statement with the following Securities standing in the name of the Accountant of the Bank of England [illegible] one of the Trustees viz. —

£12,600	2½ per cent Consolidated Stock
£3,300	3% per cent Conversion Stock
£[illegible]	4 per cent Consolidated Stock
£1,711	3½ per cent War Stock

[illegible] Compared these Accounts with the Vouchers and found them correct. [illegible] Audit for these Accounts.

(Sd.) [illegible] HONEYCHURCH

(Sd.) C. V. GRIFFITHS
Surgeon Rear Admiral (ret.)
Honorary Treasurer
January 11, 1939

JOURNAL OF THE ROYAL NAVAL MEDICAL SERVICE

Balance Sheet 1938

Assets	£ s d	£ s d	Liabilities	£ s d	£ s d
Balance in bank Dec 31 1938	194 8 11		Nil		
£1100 3½ per cent Conversion Loan	500 0 0		Balance Credit		794 8 11
£300 3½ per cent War Loan	300 0 0				
	£794 8 11				£794 8 11

Examined at the Annual Meeting of the Executive Committee held on January 31

(Sgd) CREASER
Surgeon Rear-Admiral (ret)

(Sgd) H. [illegible] GS
Surgeon Captain
Joint Editors and Managers

Preparations, &c.

WELLCOME BRAND TUBERCULIN P P D PURIFIED PROTEIN DERIVATIVE

"WELLCOME" Brand Tuberculin P P D Purified Protein Derivative, the introduction of which for diagnostic purposes is announced by Burroughs Wellcome and Co., is prepared by a method resembling that described by Dr Florence Seibert (*Amer Rev Tuberc* 1934 xxx 713). It may be regarded as the active principle of tuberculin, and appears to possess the following advantages: (i) Constancy of composition and potency. (ii) Absence of non-specific substances. (iii) Stability in the dry state and (iv) Ease of preparation of dilutions. The product which is prepared at The Wellcome Physiological Research Laboratories, Beckenham, Kent, is available in three strengths, designated Nos. 1, 2 and 3. Each packing contains a sufficiency of dried P P D and of a special boiled solvent to prepare 1 c.c. (ten test doses) of a 1 in 10 000, 1 in 1 000 or 1 in 100 dilution respectively. While solutions must be used on the day of preparation, the dried P P D is exceptionally stable and has shown no detectable loss after several years at room temperature.

Notices.

NAVAL MEDICAL COMPASSIONATE FUND

At the Quarterly Meeting of the Fund held on January 31, 1939, Surgeon Vice-Admiral P. T. Nicholls, C.B., M.V.O., Medical Director-General of the Navy, in the Chair, three cases were considered and £120 voted to the applicants. The following is a summary of these cases relieved:—

Two sons, aged 64 and 65, of a Fleet Surgeon who died in 1878. The brothers have never been able to earn their own living and their joint income is insufficient to provide for the cost of maintenance, attendance, &c. Voted £80. Total amount received from the Naval Medical Compassionate Fund at various awards £1 230.

Daughter, aged 73, of a Surgeon who died in 1866. Lives with her sister. Poverty-stricken, without income and dependent on grants received from charitable funds. Voted £60. Total amount received from the Naval Medical Compassionate Fund at various awards £1 293 10s.

Son, aged 18, of a Surgeon-Captain who died in 1937. Assistance was required to enable him to continue his studies. Voted £30. Total amount received by dependents of the Officer from the Naval Medical Compassionate Fund £150.

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THE PARKES MEMORIAL PRIZE, 1939

In the absence [illegible] recommendations for the award of the Parkes Memorial Prize for the year 1939 the Committee administering this Prize Fund has decided to withhold the award for the year referred to.

The Parkes Memorial Prize consisting of a gold medal and £30, is awarded annually to the officer who is considered by the Committee to have done most to promote the advancement of Naval or Military Hygiene.

In awarding the prize for 1939 (and thereafter until further notice) first consideration will be given to original articles or reports of investigations of value from the point of view of Naval or Military Hygiene, and published in one or other of the various medical journals.

The prize is open to Medical Officers of the Royal Navy, Army and Indian Army with the exception of the teaching staffs of the Royal Naval Medical College Greenwich the Royal Army Medical College London and the Army School of Hygiene, Aldershot.

Notice.

THE EDITORS invite Medical Officers to send in Original Papers on professional subjects, travel personal experiences &c. Items of news and matters of interest to the Naval Medical Service will be welcomed from ships and establishments on home and foreign stations.

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All Communications should reach the Editors on or before the 1st of the month preceding the date of issue. Unless clearly written they should be typed in order to avoid mistakes and they should be addressed to the Editors JOURNAL OF THE ROYAL NAVAL MEDICAL SERVICE Royal Naval Hospital Haslar, Gosport.

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The payment of subscriptions by Banker's Order is recommended as it relieves the Subscriber of the necessity of forwarding a cheque each year and simplifies the keeping of accounts.

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VOLUME XXV JULY 1939 No 3

Journal of the Royal Naval Medical Service.

Articles.

PHYSICAL EFFICIENCY AND SERVICE FLYING

By Group Captain A. I. Cook, O.B.E., R.C.P., R.A.M.C.
Royal Air Force.

The dangers inherent in flying and the expense of training have resulted in the selection and medical care of personnel engaged in flying duties becoming a specialized subject. Much research has been done on the matter during a period now extending well over twenty years. The subject has been largely bound up with the question of physical efficiency and the high standards which the Royal Air Force medical authorities have set up have become almost a by-word. It must however be acknowledged that despite insistence on this high standard there has always been a proportion of candidates who have failed to get through their flying training for one reason or another. Similarly there has always been a certain wastage due to pilots finding themselves unable to withstand the various stresses to which their Service duties subject them. As a rough estimate it may be said that about 20 per cent. of candidates passed by the Selection Board are rejected on medical grounds while a further 20 per cent. are rejected at the training schools as unlikely to become efficient pilots. This number of rejections, big as it is, does not even approximate to those given for the American Flying Service, where about 70 per cent. are stated to be rejected on medical grounds and over 80 per cent. of those passed medically fit fail during training (Mashburn 1934). These rejections are a source of loss to the country—among those found medically unfit may be some with the ideal temperament for the Service pilot while those found to lack flying ability after a number of hours tuition have been a useless financial drain. To keep these two groups at the lowest possible level has been the aim of all who have practised aviation medicine.

It is advisable for those engaged in work of this nature to take stock of

the problem individually as far as possible with an unbiased mind, to ascertain in what direction their methods are failing, and where further research is necessary. Here an attempt will be made to review the relationship of physical efficiency to the problems arising in the selection and care of Service pilots from the standpoint of the physician. The question is a big one and the various factors so interrelated that allowance must be made if the argument strays into the domain of the physiologist or the psychologist.

It is obviously essential before attempting to discuss the principles involved to have a complete knowledge of the stresses to which those who undertake flying duties in the Services are subjected. The architect can calculate with great exactness the stresses placed on any part of a building, he can subject component parts to tests which tell him when the breaking point is reached. Other methods have to be used when dealing with human material, but this is the ideal which should be before every medical assessor for flying duties, knowing from previous experience the causes of breakdown, he must gauge how each particular candidate or pilot will respond to the stresses experienced in Service flying. It must first be realized that there are considerable differences between civil and Service flying. Nearly everyone can be taught to fly. An instructor recently instanced the case of a lady well over 50 years of age who had "gone solo" after eighty hours dual tuition, while from American sources comes the tale of a machine so easy to fly that men and women who have never flown before, are able to fly solo after a short period of oral instruction. It is, however, one thing to fly an ordinary training machine around an aerodrome, quite another to fly a Service type machine and still another to fly in wartime.

The stresses to which a Service pilot is liable may be divided into three groups which, although they may be discussed separately, tend to overlap considerably. These groups are —

(1) Nervous. (2) Respiratory. (3) Cardiovascular.

(1) Nervous. The nervous element in flying is not really within the province of this review, but it is impossible to discuss the question of physical efficiency in relation to Service aviation without some reference to this side of the subject.

The nervous factor, particularly in candidates examined for the first time, has a marked influence during all stages of the examination, and, unless this is kept in mind, undue importance may be attached to reactions that are emotional in origin and usually transient in character. These reactions may affect any part of the examination, not least the various tests for physical efficiency. The effect of the nervous strain on the blood-pressure at the first examination of some candidates, is well brought out in the accompanying diagrams (fig. 1) taken from Treadgold (1933). How much importance should be placed on this emotional reaction when assessing temperamental suitability for flying? It might be imagined that

of hypermetropia [illegible] medical examination [illegible] for an [illegible] to withstand [illegible] This is very [illegible] the case, and many examples [illegible] of excellent pilots who have been of a hypernervous type In one instance a pilot whose [illegible] record could only be described as first class, inevitably fainted when sitting in the dentist's chair Many of the pilots who won Victoria Crosses in the war were of a quiet sensitive type, and some were distinctly hyperneurous Hyperthyroidism, owing to the associated nervous symptoms usually combined

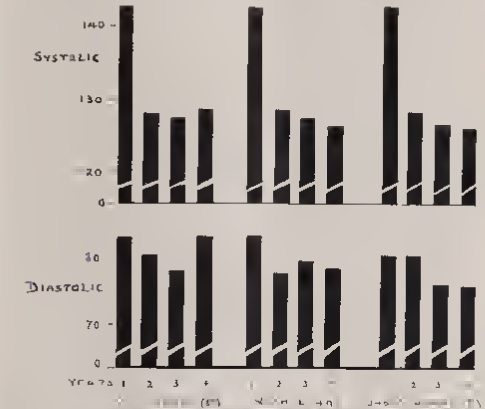


FIG 1.—(After Tr[illegible] [illegible] emotional factor [illegible] [illegible] groups) compared [illegible]

a complete bar to any [illegible] who has done many [illegible] though suffering from [illegible]

All flying in some extent [illegible] The danger of falling is one [illegible] which may leave only slight [illegible] cases it is a lesson which is [illegible] inability to look down into the [illegible] young adult approaches flying [illegible]

thrill of speed and the joy of controlling a wonderful piece of machinery. Some, more imaginative pass through a period when fear has to be more or less consciously repressed, eventually gaining confidence with increasing skill. For some fear never wholly disappears and symptoms of an anxiety state may occur at an early period of their training. Even the most poised pilots may show that loss of confidence which unless immediately treated will end in a frank anxiety state. Suddenly for some reason not obvious to the outsider some minor accident, private worries, or even the awakening of a too lively imagination, may liberate a series of repressions. One of the commonest beginnings of an anxiety state is a feeling of nausea or giddiness in the air, possibly resulting from repression, possibly from some mild gastro-intestinal upset. Almost inevitably the feeling will come. Supposing I become so giddy that I lose control of my machine, or what if the giddiness comes when I want to land. Vomiting possibly once or before experienced while flying may follow, serving only to exaggerate the growing fears. These symptoms will react on the other systems of the body, causing loss of efficiency which is unexplained, until symptoms and questioning lays bare a series of nervous fears which may have been present for a long period.

One fact which was clearly brought out in the War was that any individual would sooner or later break down if the stress was sufficiently severe. Maurice Wright (1939) states in my opinion based on four years' work with shell shocked patients no one of us however phlegmatic, is immune from anxiety. It is just a question of dose. If stress is sufficiently prolonged the most phlegmatic may break down. We are only beginning to realize the effect of neurotic anxiety on every function of the body. As the result of endocrine and sympathetic disturbances no system is immune—cardio-vascular, digestive or respiratory.

There can be no question that the nervous element is by far the most important and also the most difficult to estimate in choosing and training flying personnel. Physical efficiency is easier to gauge but by itself is of less importance.

Every medical officer dealing with flying personnel should remember the motto pencilled by Earl Haig (Duff Cooper, 1936) at the bottom of a report on training: 'Success in war depends more on moral than on physical qualities. No amount of skill can make up for lack of courage, energy and determination.'

(2) Respiratory. It was the occurrence of symptoms due to low-level oxygen anoxia that first called the attention of the authorities to the necessity of specialized investigation in the selection and care of pilots. With the beginning of what may be called the middle period of the late War trench warfare had become more or less stabilized and anti-aircraft guns were increasing in numbers and efficiency. As a consequence, pilots were compelled to fly to higher and higher altitudes in order to reach zones in which they were immune from the attentions of the anti-aircraft guns. It

[illegible]

[illegible] The [illegible] of the body, but principally the nervous system [illegible] well known to medical men as a result of the classic accounts of balloon ascents as those of Glaisher and Tissandier and the results of the investigations of the medical expeditions to high altitudes, when the effects could be studied with greater precision. It was this problem which appeared to Flack and his co-workers to be of greatest importance and it was to this that they chiefly addressed themselves. Various ingenious methods of simulating different altitudes while subject and investigator remained at ground level were devised of which those of Dreyer (1920) and of Flack (1920) may be mentioned. Investigation with these methods soon showed that different individuals were capable of withstanding the effects of lowered oxygen tension to very different degrees. Some could withstand simulated altitudes of 20 000 feet or more with apparent ease, while in others symptoms began to appear at much lower levels. It was shown however that although a subject might not complain of symptoms there was a demonstrable loss of efficiency at heights over 15 000 feet: simple intellectual problems took longer to do and were done more inaccurately than at ground level. Those prone to react quickly to lessening oxygen tension soon became mentally dazed and in some at even moderate heights, severe symptoms resulted ending in syncope. Moreover in many instances instead of acclimatization occurring as had been reported by the high altitude expeditions, deterioration often marked in degree would occur. Thus a pilot who at first could fly with comfort at 18 000 feet would report the onset of symptoms at lower and lower levels. It was with the problem of detection of the candidate who was abnormally sensitive to lowered oxygen tension in mind that Flack devised and standardized certain of his well known tests. In particular the breath holding test was suggested as being in some measure comparable to the effects produced when ascending to high altitudes. There can be no doubt that with increasing knowledge and with improvements in the technique of oxygen administration the important time of respiratory strain has been relegated to the background. Higher levels than were imagined possible a short time ago can now be reached in comparative comfort by increasing the pressure in the atmosphere around the pilot either by means of an airtight suit (Marshall 1918) or by means of an airtight cabin.

Although these advances have to a great extent solved this difficult problem cases presenting symptoms of anoxia during flight are still met. Recently an officer was doing a routine height test during which he was supposed to reach 15 000 feet and stay there for thirty minutes. Apparently rather bored with the whole procedure he more or less allowed the machine to fly itself, and recollected seeing the altimeter register 18 000 feet. The next thing he remembered was recovering his senses

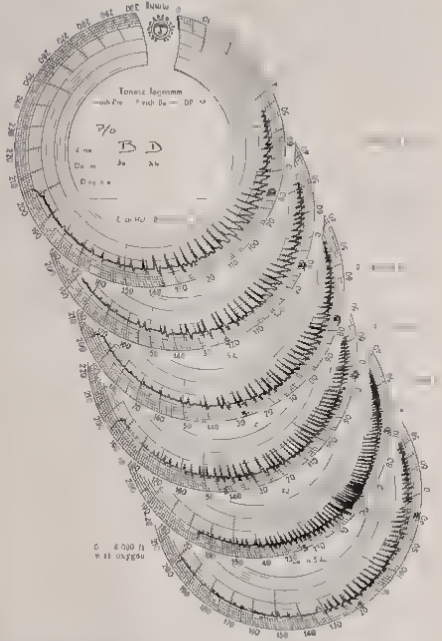
with the machine out of control, the altimeter showing something just above 15 000 feet, and the air gunner passing a note forward asking how high they had been. There can be no doubt that the pilot was one of those individuals rather susceptible to oxygen want and that he had lost consciousness for a short period. An extremely interesting instance of symptoms due to this cause has recently been published by Luedham (1937). In this instance a pilot doing a routine height test was provided with an altimeter which, owing to an error only registered half the true altitude. The complete loss of judgment and of mental balance, yet the determination to do something which had the pilot been normal, he would have realized was impossible is well brought out.

Black maintained that symptoms of flying stress first became apparent in many instances as a respiratory insufficiency which showed in the respiratory tests. These tests may be classed as "volitional tests," that is they are largely under the control of the subject, and are dependent among other things on his powers of determination. Hence the psychological attitude of the subject at the time of test may have a marked effect on the results obtained. A pilot keen on his work, possibly afraid he may be taken off flying, and so eager to do his very best, will almost invariably be successful with these tests. On the contrary a pilot suffering from anxiety effects due to flying, realizing that he has been something of a failure, will not call out that extra effort necessary to obtain a good result. It is unlikely that there is any real respiratory insufficiency in the latter type of case, but the will to do the best is lacking and cannot be stimulated by any amount of encouragement.

Respiratory efficiency and an ability to withstand lowered oxygen tensions, while an advantage to a pilot have not now the supreme importance which was assigned to them in the early days of aviation medicine when artificial oxygen supplies were lacking. As a guide to the onset of flying strain an apparent deterioration in respiratory efficiency may be a help. There are, however, usually other and better guiding signs, and it is important to remember that the basis of the impairment is more likely to be psychological in origin than respiratory.

(3) Cardiovascular. Strain is thrown on the cardiovascular system of pilots from a variety of causes.

Diminished oxygen tension, besides its effect on the nervous and respiratory systems, causes marked effects on the cardiovascular system. These effects vary considerably with the speed of ascent and the time spent at any given altitude. Slow ascents allowing for some adjustment of the circulatory mechanisms (Rein 1938). At what may be called a normal rate of ascent, with lessening tension, the pulse rate begins to increase and the blood pressure usually rises. Above a certain critical level varying with each individual but at about 15 000 feet the diastolic pressure begins to fall to an extent which may embarrass the cranial circulation. The pulse usually becomes more and more rapid, although in a small percentage of



F . . . . To show the effect of diminished oxygen tension of the . . . . a sensitive individual. Figures adjacent to millimetres of . . . . Systolic blood pressure as determined by the auscultatory method. Diastolic blood pressure determined by the auscultatory method.

pilots at the limit of endurance is reached the face may drop rather rapidly, as a prelude to fainting. These signs of cardiovascular disturbance will be shown in the accompanying oscillograms (Plesch) taken on a pilot while in the low pressure chamber at Farnborough (fig. 2). The highest oscillogram in the figure was taken at ground level, the lower ones at simulated pressures of 5 000 feet, 10 000 feet, 15 000 feet and 18 000 feet. The last one, the lowest, was taken at 18 000 feet a few seconds after artificial oxygen had been administered. The increase in rate with commencing fall of the diastolic pressure as distress commences is shown on the records taken above the 10 000 feet level.

Another factor in causing strain on the cardiovascular system is the fatigue resulting from long flights consequent on the nervous strain due to discomfort, confinement, noise and other disturbing factors inseparable to some extent from Service flying.

An even more important factor is the stress thrown on the circulation as a result of high speed flying, which under certain circumstances causes symptoms due to centrifugal effects. These effects occur as a result of rapid acceleration due to the manœuvres of the machine, normal straight flying having little effect, except during certain special occurrences such as catapulting. The usual manœuvres causing centrifugal effects are looping, pulling quickly out of a dive, and during sharp turns. The stresses placed on the pilot's body by these centrifugal effects are measured in terms of gravity (*g*), which is an acceleration or change of velocity of about 22 miles an hour in every second during which it is acting. This force can be measured by means of an accelerometer, an instrument which gives either a direct reading of the maximum force or a continuous record throughout the period of its application. The amount of centrifugal acceleration produced by any given manœuvre varies with the square of the speed of the machine and inversely with the radius of the circle through which the machine moves. For example, a machine flying at 200 miles per hour, executing a steep turn with a radius of rotation of 300 yards, will give an accelerometer reading of rather over 3 *g*. If the speed is increased to 300 m.p.h. and a turn made with a similar radius the force becomes nearly 7 *g*. If the radius of the circle is increased to say 800 yards although the speed is still kept at 300 m.p.h. the resultant centrifugal force is rather less than 3 *g*. The effect when the pilot is in the usual sitting position is to force him into his seat and to drive the fluid elements of the body towards the more dependent parts. The displacement of the blood may be so severe as seriously to interfere with the filling of the right side of the heart, leading eventually to cerebral anæmia and syncope. These effects have been studied experimentally by means of large centrifuges in which animals or human beings can be placed and the *g* forces varied at will by the investigator. Fischer (1937), by mounting an X-ray apparatus on the centrifuge has been able to demonstrate the severe filling effect which may lead to the drainage of all blood from the heart. If prolonged for a sufficient period,

[illegible] cause the most [illegible] [illegible] with the wing some of the [illegible] [illegible] this criticism The centrifuge takes an appreciable time to reach speed and during this period other effects are encountered especially to changes in the internal ear These labyrinthine disturbances violent giddiness, or even fainting which allows violent swing head possibly leading to severe injury, and even death

The symptoms produced in the pilot, as a result of high stresses vary from a slight and hardly perceptible dimming of complete blindness without loss of consciousness and eventually most severe cases actual syncope The following description symptoms, if somewhat journalistic expresses forcibly the experienced by an American pilot— Black ink floods over my lungs knock off work My fingers slide off the stick A millstone top of my head and mashes me down into the seat A pair of thumbs my eyeballs into their sockets and a vice clamps my head a few times My heart seems to be pumping air Then everything me I am out (Lay 1938)

Why symptoms should at first be almost entirely related to the eye not properly understood The most obvious explanation of the phenomenon imagines that as a result of the mechanical factors in the eye circulatory anemia occurs in the retina below the other brain arteries are affected with consequent earlier production of eye symptoms Livingston (1941) however considers that the attack on vision is concentrated not upon the retina alone, but is spread throughout the visual pathway exercising its effect in the area of the external geniculate body about the calcarine fissure and upon the association tracts that raise the impulse up into the level of conscious appreciation

Certain factors influence the amount of stress placed on the pilot and in consequence the severity of the resulting symptoms —

(1) Symptoms vary directly with the amount of the force applied For reasons which to some extent will be explained later individuals differ considerably in the amount of stress of this type that they can withstand without ill effect

(2) The duration of the stress is of prime importance If a machine is dived steeply and then pulled out as quickly as possible stresses of 7 or 8 g or more, may be experienced but these are only momentary and often cause no symptoms A loop will cause a slightly longer period of stress while with a tight descending spiral a stress of 4 to 5 g can be maintained for thirty seconds or longer Manœuvres of this last type will cause one form of eye symptoms in the majority of pilots and, in those especially susceptible syncopal symptoms may be produced

(3) The position of the pilot in relation to the stress is also of importance In ordinary circumstances, in the sitting position the force is applied through the head down to the buttocks and it is for this direction

of the force that the figures given previously are meant to apply. Much greater strains can be borne if the force is applied dorso ventrally that is supposing that the pilot could fly the machine while lying flat on the floor. If this were possible, stresses of as much as 12 g or more might be experienced, without loss of consciousness.

If the force is applied in the opposite direction from the buttocks towards the head as may occur when doing an outside loop, symptoms are more easily produced. Stresses of 2 to 3 g are as much as the average pilot can stand when the force is in this direction, and cause a red film over the eyes—"redding out"—and a bursting feeling in the head. The greater severity of symptoms is due to the fact that the blood instead of being displaced into the distensible vessels of the abdomen and limbs, is being flung into the inelastic cranium.

If the cardiovascular system of the pilot was simply an inert system of tubes it is doubtful if a strain of much more than 3 g, applied from the head down could be withstood without the onset of syncopal symptoms. As we know that many pilots can withstand stresses of 5 g or more for periods of many seconds it is obvious that some form of compensation takes place. It has been shown by von Diringshofen (1934) who mounted a self-recording systolic blood pressure instrument in an aeroplane and took records of the reactions under different stresses, that the systolic blood-pressure rises in order to counteract the effect of the centrifugal force. This rise in blood pressure varies in amount to some extent with the duration of the stress applied, rising to higher levels with the longer stresses. It is this ability of the blood pressure to react to strain which is of such great importance and explains why such hypotensives who theoretically should be influenced more than the individual with a normal pressure can stand considerable accelerative forces without undue effect (Rook & Dawson 1938). These observers have brought forward evidence to show that under stress, symptoms occur early in those whose blood pressure does not react efficiently, or, if it does react fails to reach a certain critical level.

It must be emphasized that in the normal course of flying pilots are rarely subjected to severe strains of this sort. It is almost entirely on the fast high-speed machines that they are likely to occur. On most occasions when high stresses are produced, it is only for very short periods and symptoms are usually confined to temporary blindness or momentary blackout. With the bigger types of machine it is in most cases unsafe, or a physical impossibility to pull the machine quickly enough out of a dive to produce much effect on the pilot. Although some maintain that there is rarely any need for manœuvres producing high accelerative stresses to be performed even in war flying, there can be no doubt it is an important problem in aviation medicine. Some assistance can be obtained, in detecting those pilots who are likely to react badly to these stresses, by watching the effect of gravity on the blood pressure. Failure of a diastolic pressure to rise efficiently, when the subject changes from the horizontal

the vertical position, [illegible] with disinclination more important in the present state of our knowledge is the [illegible] when taking the history of a candidate to question particularly for any symptoms suggesting a tendency to [illegible] giddiness. Such symptoms when of recent occurrence especially associated with evidence of [illegible] vestibular inefficiency should call for extreme caution when assessing the subject's fitness for flying.

Physical Efficiency and Flying

A consideration of the various strains to which a Service pilot may be subjected makes it obvious that a considerable measure of physical efficiency is a necessity if satisfactory service is to be given.

During the immediate post war period a very high degree of physical efficiency was insisted upon, emphasis being laid on the necessity for selecting only the fittest candidates. During this period the medical assessors were in the fortunate position of being able to pick and choose, the supply always being greater than the demand. A certain amount of criticism, usually of a rather unstructured nature, has from time to time been levelled at the high standards that then prevailed. It has been argued that one of the best of the Allied pilots was a consumptive and various one-eyed pilots of international fame have continually been brought forward as examples of the ability of the physically unfit to fly successfully. It never seemed to have dawned on the critics that phthisis is a condition which is liable to sudden medical catastrophes, and while it is one thing for a pilot who has done many hours flying to carry on again after the loss of an eye, it is another to teach a one-eyed candidate to fly to the Service standards. Nor do they state what their own reactions would be likely to be if they found themselves flying in close formation, the pilot on the immediate right being blind in the left eye and the pilot of the machine on the left blind in the right eye.

Physical efficiency for prospective and serving Service pilots can be viewed from two angles. Firstly, there is the question what departure from the normal or, put in another way, what diseases occurring in an individual are compatible with fitness to fly. Secondly, in the absence of any appreciable disease, is lack of physical fitness, as shown by poor functional efficiency of cardiovascular or respiratory systems, to be made a bar to acceptance of a candidate or a reason for limiting or stopping the flying of a trained pilot.

(1) Organic Disease and Flying

In order to do justice to this side of the question it would be necessary to consider each system of the body separately with the various related diseases, a procedure which would consume much time and space. Here only a few general principles are enunciated.

(*a*) *Candidates.*—It may be taken more or less as an axiom that

[illegible] must be free from organic disease. [illegible] test for fitness of candidates for admission to the Service [illegible] but is rather than the sole question of a potential ability to [illegible] The candidate is being accepted for a period of some years at least and conditions which might be allowed to pass in the serving pilot might rightly suffice to reject the candidate. The presence of certain diseases, which in the usual course of events are no bar to the public service, may be if not an absolute bar a cause for anxious thought in passing a candidate for flying duties. Such a problem occurs in the group of allergic diseases. A history of recent attacks of asthma, or a history of migraine with visual disturbance is obviously a cause for rejection. With the milder cases of those in which attacks are infrequent the question arises, is it an indication of a hypernervous temperament liable to break down under the stress of Service flying? Similarly, a history of gastritis if recurrent or severe is so often associated in young adults with a tendency to nervousness that it must be viewed with suspicion. A history of some severe infectious illness, so long as cure has been complete or has left but little scarring may in most instances be neglected. Many candidates have been accepted with empyema scars, and few, if any have subsequently complained of respiratory trouble with flying. Any history of fainting attacks, particularly if inexplicable in origin or recurring more than once, calls for the greatest caution. The care with which candidates giving a history of fainting attacks, have been assessed in the Royal Air Force is shown by the rarity of the reported cases of epilepsy in trained pilots.

(*b*) Pilots. Organic disease in serving pilots raises some of the most difficult problems that face the physician practising aviation medicine. Too great caution and a tendency to place unnecessary restrictions on flying, may spoil a man's career or actually ruin his means of livelihood; over optimism may place the pilot and his passengers in jeopardy; not to mention the possibility of danger to persons on whom an aircraft may fall.

In tackling this problem one great principle stands pre-eminent. Any disease likely to cause sudden unexpected catastrophe with temporary loss of physical or mental control must be a bar to all piloting. Such loss of control may result from severe pain as in any form of colic or from any disease of which severe hæmorrhage is a complication, or in which syncopal attacks may occur. It is often extremely galling for a pilot, feeling quite well but who has had a recent attack of renal colic to be classed as medically unfit. Nevertheless under no consideration should an individual giving a history of recent renal colic be allowed to pilot a machine. Only after full investigation of the cause of the condition and a long period of freedom from all symptoms, can return to flying be allowed. Each case must be considered and treated on its merits. But it is often possible, after careful watching, to allow some which at first looked most discouraging to return to flying.

Physical Efficiency

[illegible] physical efficiency has been regarded as a criterion for Service flying that it must [illegible] suggest that lowering of the standard for candidates on [illegible] only reasonable but desirable.

It has been argued that a good response to a battery of efficiency-tests will aid an assessor in picking out candidates who will make good during flying training and who will be able to withstand the strain of continued Service flying. Certain observers have from time to time criticized the former contention and recent work [illegible] that these tests have no relationship of any sort to an individual's ability to fly (Beaven, 1934; Fowler, 1938). Burton and Rook (1939) have followed the fortunes of just over 100 candidates whose physical efficiency was so low that, according to the ordinary standards, it should have led to complete rejection from flying training. At the same time a [illegible] of controls have been kept under observation. During the [illegible] training both groups were examined at short intervals and [illegible] with them until they were posted to Service squadrons. The [illegible] failures to learn to fly was about the same in the two groups, and statistical analysis by Chambers (1939), of the Industrial Health Research Board showed that no single test used or group of tests [illegible] to an ability to learn to fly. It may well be that [illegible] substandard candidates will break down sooner or later under the [illegible] strains which they will encounter. As has been previously stressed, [illegible] immune from nervous breakdown if the stress is sufficiently [illegible] we can say that in this group there may not be [illegible] whose flying life may be brief even though it may be short. [illegible] efficiency per se is no criterion of efficiency in flying. Many [illegible] have been given of first class athletes who have, for one reason or another, been unable to learn to fly, and of brilliant pilots whose physical [illegible] never been first class. Many candidates come for examination [illegible] work has given them little opportunity for exercise, and whose [illegible] is best described as "out of training". This is no [illegible] subject them to severe tests of physical efficiency, and it is [illegible] that the responses of these individuals are poor. Some allowance [illegible] made for this rather by novices, more healthy regimen, but [illegible] after a period or by the assessor allowing for the [illegible] come with a healthy open-air life. In the investigation [illegible] six months' training, all substandard candidates showed [illegible] their physical condition, and nearly all had reached as high [illegible] the members of the control group.

Hence it is unwise to set up too severe or too rigid [illegible] entrants for flying duties. While, for reasons given above, [illegible] for a pilot to have a high grade of physical efficiency, the [illegible] tion can give a most misleading picture owing to the emotional [illegible]

in which it is made—moreover a tense attitude at medical examination may have no relation to subsequent flying capability. In a majority of cases improvement in physical efficiency in a few weeks can confidently be relied upon, and no hesitation need be felt in giving any candidate with moderately poor physical efficiency the benefit of the doubt, and accepting him if he has in some way or other shown that temperamentally he is of a suitable type. If a candidate, despite a fast pulse, a high pulse pressure and other signs of "nervousness" can yet show a quiet demeanour and an ability to think quickly and answer readily, when he faces his medical examiner, it speaks well for his chances of making good. Experience has moreover shown that some pilots with unstable vasomotor systems, as shown by marked changes in the pulse-rate or in the blood-pressures for only a slight cause, are just the ones who have made the best and most daring pilots. As Koschel (1922) remarks, it would indeed be regrettable should these emotional people be withdrawn from flying. On the other hand evidence of nervous stress while under examination, which reveals itself, or which the candidate attempts to relieve or mask by undue restlessness or verbosity is an adverse characteristic.

Physical efficiency tests therefore are a part, and a minor part only, of the examination of candidates. A poor result in the tests should be regarded as a warning for extra caution both in the physical and psychological investigation. The unstable vasomotor system may be a manifestation of some underlying disease, of which the chief is probably tuberculosis. Herein lies the importance of X-ray of the chest in any doubtful case, and routine X-ray of candidates for flying a procedure already in vogue in several countries is in the long run a sound economic proposition.

Working on these principles more stress should be laid on the suitability or unsuitability of the mental make-up of the would-be pilot and less on the actual physical efficiency as found at the original examination, so long as organic disease is absent. In consequence of this attitude it is possible that some candidates will be passed whose physical efficiency towards the end of their training has not reached the desired standards, as has that of their fellows. These individuals will require close observation and care in their subsequent career and must be protected from the more severe strains of flying until their physical efficiency improves. It is probable that the numbers falling into this group will be few. The only alternative to this method of grading is the rejection of a large number of candidates many of whom would make first-class pilots in order to eliminate the few who remain substandard for a longer period than is usual.

(*b*) Pilots. Despite what has been said about the relative unimportance of physical efficiency in candidates its importance in Service pilots cannot be overestimated. The candidate will not be placed under any undue physical strain for at least some months after his original examination: the pilot must at any moment be in a condition to undergo any of the severe strains that have been already detailed. Hence it is obvious that

all Service pilots should reach, and [illegible]. The medical officer can never do [illegible] and other reasonable methods to the [illegible].

It is in the trained pilot that the physiological [illegible] greatest value. Whatever may have been the result in the [illegible] it is not long before each individual reaches a base line. This base line varies considerably in different persons, but is remarkably constant for each one while he remains in good health—periods of ill health are marked immediately by the tests in the majority of cases. The Central Medical Establishment of the Royal Air Force now have numerous records of pilots who have been examined at intervals of a few months over a long period. In many cases most striking help has been given by the results of physical efficiency tests, in detecting oncoming disease or temporary setback in general health.

To sum up, physical efficiency tests are of some value when comparing individual with individual, but they are of much greater value in comparing the physical efficiency of one individual at different periods. As such they are of extreme value so long as it is not imagined that they have some subtle relationship to flying ability. They are not, and cannot be, a penny in the slot method of detecting illness, but used with a common sense they can be of extreme value in keeping a grip medically on [illegible] of presumably healthy young adults.

Physical efficiency is still a prime necessity for the Service pilot, but no amount of physical efficiency can make up for the discrepancies of a temperament unsuited to the rigours of Service flying.

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SOME OBSERVATIONS ON THE POSSIBLE STREPTOCOCCAL ÆTIOLOGY OF ACUTE RHEUMATISM

An Address to a Medical Meeting Royal Naval Hospital Chatham

By C A Green M B Ch B Edin R N

Late per Rheumatism Committee Research Section

At the outset I would draw your attention to the great difficulty which any investigator studying the ætiology of rheumatism has to face in attempting to limit or define his problem No disease can be more varied in the clinical picture presented At one time the disease strikes with dramatic suddenness and pyrexia polyarthritis of flitting character, with usually some form of cardiac involvement are the principal features of acute rheumatic fever In other subjects the onset may be slow and insidious picking out the locomotor system for preference as in the various chronic forms of rheumatism Occasionally the nervous system bears the main brunt of the attack and chorea is the resulting clinical condition Even the growing pains of childhood have been considered in certain instances early manifestation of the rheumatic syndrome Of all these conditions acute rheumatic fever is the most satisfactory for purposes of investigations on ætiology There is some degree of uniformity in the clinical features and in the pathological processes involved and the observations which follow have been based on a study of this form of the disease

If acute rheumatic fever is infective in origin and a survey of the epidemiology of the disease alone leads one to the conclusion that this is the case then we might expect that different workers would have found the alleged causative agent to be always of the same kind Unfortunately this has not been a common finding and no subject has become more controversial It was as long ago as 1899 that Westphal Wassermann and Malkoff first stated that they had isolated a streptococcus from the blood heart valves and brain of a girl dead with acute endocarditis and chorea Further they stated that rabbits, injected with cultures of this organism developed arthritis and from these findings they concluded that streptococcal infection was the cause of rheumatism In this country, Poynton and Paine had independently come to the same conclusion and their first publication was actually in the *Lancet* press when Westphal's article appeared They were a little more guarded than Westphal and stated the opinion that streptococcal infection was *a* cause Later they toned to Westphal's view that it was *the* cause Ever since this pioneer work was reported, there has been a constant division of opinion on the interpretation

to be placed on their results Many people have supported it but an equal number if not more were unable to confirm their observations These dissentients have pointed out, in support of their negative cultural results, that streptococci have rarely been demonstrated in the affected tissues Further, they drew attention to the fact that the pathological reaction was utterly unlike that normally resulting from streptococcal infection For instance there was seldom any degree of polymorph response, the reaction being usually mononuclear in type Clinically this became evident in that the affected joints did not suppurate

Partly because of the unsatisfactory nature of this evidence of actual invasion of the tissues by streptococci indirect methods have been used For example, the association of rheumatism with upper respiratory disease notably tonsillitis has been examined This clinical association was recognized long before Westphal's claims were published and we now know that streptococci are the commonest cause of tonsillitis Table I

TABLE I RESULTS OF THROAT SWAB EXAMINATION IN RHEUMATIC (GROUP R) AND IN CONTROL (GROUP NR)

	Rheumatic Group R	Non-rheumatic Group NR
History of recent nasopharyngeal infection	156 (78 per cent)	33 (16 per cent)
Haemolytic streptococci isolated	58	26
No history of recent nasopharyngeal infection	44 (28 per cent)	101 (84 per cent)
Haemolytic streptococci isolated	31	33
Total number from whom haemolytic streptococci were isolated	111 (56 per cent)	59 (30 per cent)

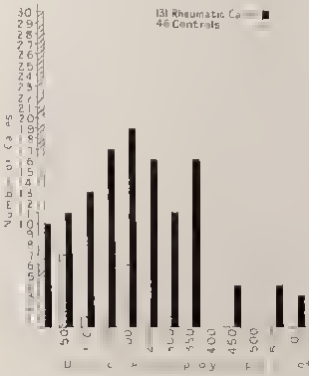
provides certain data on this point I examined two groups each of 200 patients on admission to hospital, Group R being rheumatic and Group NR, non rheumatic It is not easy by direct questioning to obtain a reliable history from patients, but cross examination showed that the data given in the table were reasonably correct As indicated 78 per cent of the rheumatic group had had nasopharyngeal infection just before their admission to hospital This could be taken as definite evidence of the frequency of pre-rheumatic throat infection However it was unexpectedly found that 16 per cent of the control group who were unselected cases in the wards of a general hospital gave a similar history The haemolytic streptococcal carrier rate in Group R was 56 per cent as compared with 30 per cent in Group NR The demonstration of haemolytic streptococci in the throat may be of great or little importance The work of Lancefield (1933 1935) has shown that this group of organisms can be further subdivided by means of a serological (precipitin) test into various groups Of those, the most important pathogens in man are in Group A Table II indicates the results obtained when this test was applied to the strains isolated from

TABLE II.—SEROLOGICAL GROUPING OF HAEMOLYTIC STREPTOCOCCI ISOLATED FROM THROAT SWABS OF BOTH GROUPS

Serological Group	Rheumatic Group R.				Non-rheumatic Group NR			
	No. of patients with throat swab positive for group	No. of strains from patients with throat swab positive for group	Percentage total no. of strains	Total	No. of patients with throat swab positive for group	No. of strains from patients with throat swab positive for group	Percentage total no. of strains	Total
A	84	17	101	87	18	7	97	44
B	1	1	3	2	1	1	1	1
C	1	2	6	5	1	11	11	6
D	0	0	0	0	1	1	1	1
E	0	0	0	0	0	0	0	0
F	0	0	0	0	0	0	0	0
G	1	6	6	6	2	1	1	1
H	1	0	0	0	1	1	1	1
Total	5	21	116	100	23	34	99	100

the above groups. It was found that 87 per cent. of the strains from Group R patients, as compared with 42 per cent. of strains from Group NR patients were Group A (Lancefield). The corrected Group A carrier rates were 50·5 and 21 in the rheumatic and non-rheumatic groups, respectively. It should be noted that the high carrier-rate of 50·5 was found at the time

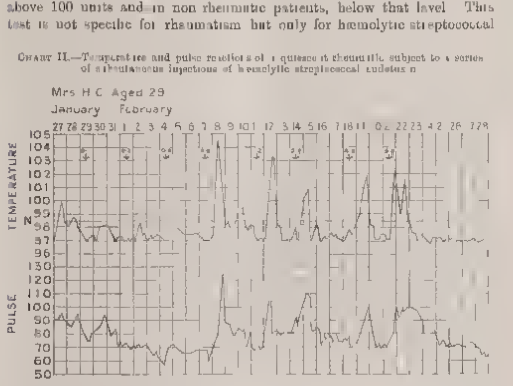
CHART I. Antistreptolysin titres of rheumatic cases and non-rheumatic controls



patients who were admitted with rheumatic manifestations, and when in [illegible] cases the local throat infection had clinically subsided

Another method of indirectly showing the influence of streptococcal infection on rheumatism, suggested by Todd (1932), is the determination of the antistreptolysin titre of the blood serum Just as diphtheria antitoxin appears in the serum of a horse injected with toxin, so antihæmolysin is produced in response to the liberation of streptococcal lysin as a result of infection In Chart I there is graphically represented the difference in antihæmolysin titres of early rheumatic cases and unselected non-rheumatic controls In general it will be seen that in rheumatic patients the titre is above 100 units and in non rheumatic patients, below that level This test is not specific for rheumatism but only for hæmolytic streptococcal

CHART II.—Temperature and pulse readings of a quiescent rheumatic subject to a series of subcutaneous injections of hæmolytic streptococcal endotoxin



infection Coburn (1936) claimed that the rheumatic person tends to differ from the non-rheumatic in the type of response shown by the antistreptolysin titre The normal response in a non rheumatic subject is a rapid rise and decline of the titre Thus in uncomplicated scarlatina the titre starts rising before the end of the first week, reaches a peak in the second or third weeks, and then falls to the normal level Coburn (1936) states that in the rheumatic person there may be no immediate rise in titre after the initial tonsillitis, but at the end of the silent period between the occurrence of the throat infection and the onset of rheumatism, there is a sudden rise in titre and coincidently the rheumatic manifestations appear Thereafter the titre may remain high for months despite the apparent absence of streptococci from the throat He concludes that this delayed

TABLE III.—RESULTS OF POST MORTEM BACTERIOLOGICAL EXAMINATION OF NINE CONSECUTIVE CASES OF ACUTE CARDITIS

	Clinical Diagnosis	Pathological State and Result of Cultures							Notes
		Tube	Heart blood	Tricuspid valve	Mitral valve	Aortic valve	Pulmonary valve	Pericardium	
1	Acute rheumatic endocarditis	1	*B. coli*	+ Haemolytic streptococci type 27	+ Haemolytic streptococci type 27	No growth	*B. coli*	− Haemolytic streptococci type 27	Haemolytic streptococci type 27 isolated from throat during life
		2	*B. coli*	*B. coli*	Haemolytic streptococci type 27, and *B. coli*	No growth	No growth	Haemolytic streptococci type 27	
				No growth	*B. coli*	No growth			
2	Mitral stenosis and incompetence	1	No growth	− No growth	+ Haemolytic streptococci type 14 and *B. coli*	− *B. coli*		+ Haemolytic streptococci type 14	Haemolytic streptococci type 14, isolated from throat during life
		2	No growth	No growth	*B. coli*	No growth		Haemolytic streptococci type 14	
		3			No growth				
3	Acute rheumatic fever	1	*B. coli*	− No growth	+ Haemolytic streptococci type 18 and *B. coli*	+ Haemolytic streptococci type 18, and *B. coli*	− *B. coli*	+ Haemolytic streptococci type 18	Haemolytic streptococci type 18 isolated from throat during life
		2	*B. coli*	No growth	Haemolytic streptococci type 18 and *B. coli*	Haemolytic streptococci type 18 and *B. coli*	*B. coli*	Haemolytic streptococci type 18	
		3	No growth						
4	Rheumatic endocarditis	1	No growth	+ Haemolytic streptococci type 6	+ Haemolytic streptococci type 6 and *B. coli*	+ Haemolytic streptococci type 6	No growth	+ No growth	
		2	No growth	No growth	Haemolytic streptococci type 6	Haemolytic streptococci type 6	No growth	No growth	
	Acute polyarthritis and endocarditis	1	No growth	+ No growth	+ *Streptococcus viridans*		− *Streptococcus viridans*	+ No growth	Pneumococci *Streptococcus mucosus* and *Staphylococcus albus* isolated on cultures from throat at post mortem
		2	No growth	No growth	*Streptococcus viridans*		*Streptococcus viridans*	No growth	
6	Acute rheumatic fever				+ Haemolytic streptococci type 2 and *Streptococcus viridans*			+	
7	Acute rheumatic fever	1	No growth	+ Haemolytic streptococci type 4	+ Haemolytic streptococci, type 4	+ Haemolytic streptococci type 4	No growth		Haemolytic streptococci type 4 isolated from throat during life
		2	No growth	Haemolytic streptococci type 4	Haemolytic streptococci type 4	No growth	No growth		
8	Rheumatic endocarditis	1	No growth	No growth	+ Haemolytic streptococci type 1	+ No growth	− No growth		Haemolytic streptococci type 1 isolated from throat during life
		2	No growth	No growth	Haemolytic streptococci type 1	No growth	No growth		
	Subacute rheumatism	1	No growth	No growth	+ Haemolytic streptococci type 1	+ No growth	−		
		2	No growth	No growth	No growth	No growth			

+ = microscopic lesions of recent origin present
− = no microscopic lesions of recent origin present

reaction indicates a difficulty on the part of the rheumatic subject in getting rid of the products of streptococcal infection

Yet another method of demonstrating this relationship between streptococcal infection and rheumatism is the study of allergy or hypersensitivity to streptococcal products As an example Chart II shows the reactions of a patient in the quiescent phase after an attack of acute polyarthritis This patient was highly sensitive to hæmolytic streptococcal endotoxin, as judged by the intradermal test, and desensitization was attempted by graded, subcutaneous doses of endotoxin The first three injections were uneventful, and for six days the temperature was normal or subnormal while the joint manifestations were completely absent After the fourth injection however the temperature rose to 104·6° F , multiple joints were sore and swollen, and there was marked tachycardia The patient rapidly returned to quiescence but the same sequence occurred after the next injection three days later Further reactions were induced in the same way Clinically these were miniature attacks of rheumatism induced by the injection of endotoxin The chart shows another interesting feature, namely, the gradual decline in severity of reactions with increasing dosage Personally, I am prepared to admit that certain manifestations of rheumatism such as the flitting joint pains may be attributed to allergy. but I cannot visualize such gross tissue change as occurs in rheumatic pericarditis being due to that cause alone. In such conditions one feels there must be some invading agent at work in the affected tissues

Last year I was fortunate enough to have access to nine cases dying of acute rheumatism, and all with cardiac lesions of some kind Without enlarging on clinical details it can be stated that these were genuine cases of acute rheumatism as admitted to the wards of the Royal Infirmary and Royal Hospital for Sick Children Edinburgh Table III indicates the type of case and the bacterial examinations made The results can be summarized by saying that eight out of nine consecutive cases yielded hæmolytic streptococci in cultures from the heart valves or pericardium Only valves with lesions were positive while valves without vegetations from the same hearts were negative on culture At once the question of a terminal, blood stream infection from some locus such as the tonsil arises to explain these cultural results The heart blood was examined as a control in every case, but hæmolytic streptococci were never recovered Terminal invasion by motile coliform organisms was encountered As additional controls twenty-two non rheumatic hearts were examined by an identical technique Of these two gave hæmolytic streptococci in valve cultures, but the heart blood was also positive As one of these positive controls was a case of post operative peritonitis, and the other a broncho pneumonia, the explanation of the positive valve cultures was contamination with infected blood, resulting from terminal invasion

Returning to the rheumatic series I had isolated a strain of hæmolytic streptococcus from the throat during life in five cases, and in each case

that strain was of the same serological type as the ... recovered at post mortem from the cardiac lesion. That fact does not ... that the streptococci were recovered from the lesion but it does ... that the relationship between streptococcal infection and rheumatic ... than a chance association, unless a phenomenal distribution ... streptococcal cultures has been encountered in rheumatic cases in animals. These results demanded a careful microscopical examination of the heart sections. Before considering that point we may see what appearances are to be found in tissues infected with streptococci from this post mort... material. Rabbits were inoculated by various routes with pericardial fluid from rheumatic cases. The fluids used were found by simultaneous cultures



Fig. 1. A drawing of a ... post mortem from ... NB. Isolated ... between ... and the ...

to contain haemolytic streptococci. The animals were killed at varying intervals after inoculation and ... Distribution of organisms was ... by the haemolytic streptococci. ... occur in large clumps the individual ... of which were Gram positive or frankly Gram negative. A ... was the lack of phagocyte reaction in the vicinity of the bacterial masses. Such an appearance is seen in fig. 1 which is a high power view of rabbit kidney. Fig. 2 illustrates a similar mass of bacteria with a few polymorphs attracted to the site. Towards one end of this clump a cell nucleus can be seen surrounded by cocci suggesting that the mass effect had possibly resulted from intracellular reproduction. This is well illustrated in fig. 3



FIG. 2.—Kidney of rabbit fixed immediately on withdrawal from the cerebral fluid obtained at necropsy from acute rheumatic pericarditis in human subject. Stained Gram. × 1,000 N.B.—The largest group of tightly packed streptococci shown on culture to be of the beta haemolytic variety seen between renal tubules. The appearance is strongly suggestive of an intracellular multiplication of the organisms. At one end of the group a cell nucleus (N) can be seen surrounded by cocci which stain reddish purple.

which shows a polymorph, laden with cocci, entrapped in a small capillary of the kidney glomerulus. Elsewhere in the tissues, the more usual distribution of streptococci was noted, as in fig. 4 indicating that the masses, previously described, were true cocci.

Next we may consider what is happening during the stage of tonsillar

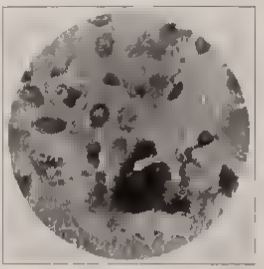


FIG. 3.—Rabbit kidney. Typical polymorphonuclear leucocyte containing many streptococci one of which has escaped from within the cell entrapped in capillary of kidney glomerulus. Stained Gram. × 1,500.

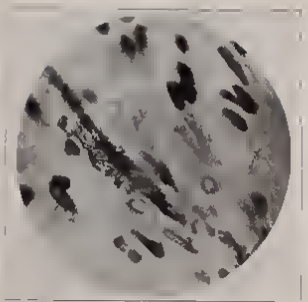


Fig. 4. [illegible] tissue extend between the [illegible] muscle fibres. Stained Gram [illegible]

infection in the [illegible] subject. In fig. 5 cocci are shown at the surface of the tonsil and others within a polymorph. Sometimes intracellular proliferation of cocci occurs locally in the tonsil as in fig. 6. This process may reach exaggerated proportions as shown by figs. 7 and 8.

Now we may examine sections of human heart valves which presented

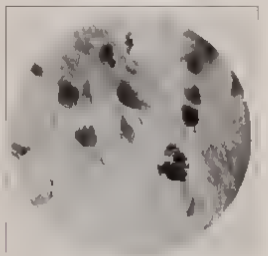
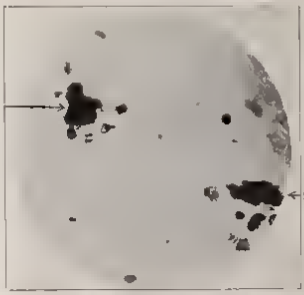


Fig. 5.—Section of tonsil from [illegible] showing [illegible] cocci intracellularly, extracellularly and also intracellularly in a polymorph. [illegible] Stained [illegible] Gram. × 1,000.



[illegible] proliferation of [illegible]

macroscopic lesions in the form of vegetations. Figs. 9 and 10 show that similar, reddish-purple, coccoid bodies are to be found in such tissues both intra and extracellularly. Fig. 11, a low power view of the centre of the base of a typical rheumatic vegetation, indicates the type of cell reaction present. In this case, as in all others, the absence of any macroscopic evidence of subacute bacterial endocarditis was confirmed. At the centre

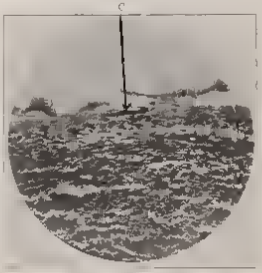


Fig. 9. Section of [illegible] (C) [illegible] extent to which aggregations of the organisms occur [illegible] × 200



of this vegetation the bu[illegible] The distribution of the bodies [illegible] In the stained preparation [illegible] Gram-negative. It is interest[illegible] was taken from an experi[illegible]

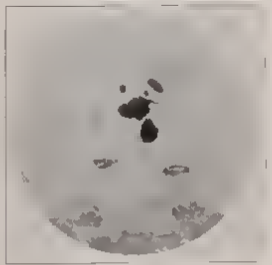


Fig 8.—Section at base of h[illegible] intracellular encysted bod[illegible] previous photographs. Stained Gram [illegible]

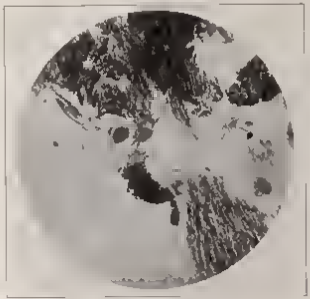


Fig. 10.—Section of human heart muscle showing aggregated masses of bodies similar in appearance to those found in streptococci. × 1,000.

strain of hæmolytic streptococcus isolated from the heart valve shown in fig. 12. The similarity between the two pictures is striking.

What interpretation can be placed on the presence of these bodies in valve tissue? If not cocci then they must be of some other nature such as

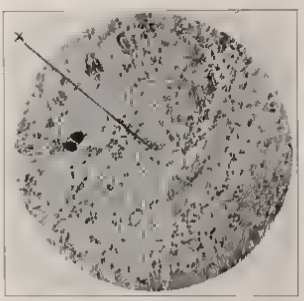


Fig. 11.—Section of human heart valve at site of rheumatic vegetation. Shows cellular infiltration of the valve. Several sections through this valve revealed no indication of any surface lesion. × 110.



Fig. 11. A group of [illegible] Stained Gram. × 1000.

mast-cell granules. The differentiation between [illegible] comparatively easy if the cells are stained [illegible] manner. It has been shown that in experimental [illegible] be aggregated in masses, and differentiation in these [illegible] easy. At present final conclusions as to the nature of these bodies [illegible]

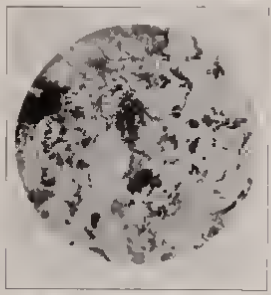


Fig. 12. [illegible] tion. The [illegible] Stained [illegible]

[illegible] In view of the frequency with which streptococcal [illegible] known to precede the onset of rheumatism, and of [illegible] known to be taking place in the tonsil, it is [illegible] whether some of the appearances in heart valves may not actually be due to the presence of cocci particularly as the cultural results undeniably support the relationship between streptococcal infection and rheumatism If that be the case, then we have at last a concrete example of a peculiar relationship between host and parasite

In conclusion then we are still without certain proof of the causation of acute rheumatism the simplest of all the rheumatic syndromes Without a knowledge of aetiology, little success can be expected from attempts at treatment Even when the cause is at last discovered, we may still be far from any advance in management, but this will at least be placed on a reasonable, scientific basis

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RHEUMATISM

BY H WARREN CROWL M D
SURGEON COMMANDER L C DUNDAS IRVINE V D R N V R
AND
HARRY COKE M R C S L R C P

[illegible] TION IN MANIPULATION BY GUY BTAI (CHAMI MB M R C S)

It is intended to review the subject of chronic rheumatic conditions with the exclusion of acute rheumatic fever and gonorrhœal arthritis) on the lines of the principles and practice employed at the Charterhouse Rheumatism Clinic on which methods definite statistical results have been determined In order to obtain such statistics it has been necessary but without difficulty, to adhere to a precise standard of procedure based on certain fundamental conceptions concerning the disease Though these are still somewhat disputed we maintain that they are adequately substantiated by scientific observation and research and it is our purpose therefore in this article to consider concisely but clearly these principles in their respective order, so that it will lead us to discuss the practical problem of the effective and simple treatment of rheumatic arthritis by vaccine methods, together with the several adjuvant forms of therapy employed, and the particular indications for their exhibition It is necessary

in the first place t[illegible] d[illegible] our ground and at the start the g[illegible] l[illegible] ization accepted in the term rheumatism must be clarified by a methodical and practical classification This will lead us directly to the adoption of a simple nomenclature It is unquestionably the diverse and multitudinous methods of classification and of terminology that have led to such a degree of confusion in the medical literature of the rheumatic conditions

There are five main groups Rheumatoid arthritis active infective arthritis, chronic osteo-arthritis spondylitis adolescens, and non articular rheumatism Subdivisions and interrelated subsidiary conditions may be listed but we consider them to be subvariants of one of the main five groups

ÆTIOLOGY AND PATHOLOGY

Rheumatism is essentially a disease the local symptoms of which are due to reaction of skeletal tissues to a noxious agent—in other words a local inflammation, and our practice rests on the assumption that the noxious agent is a direct product or result of a bacterial index Many investigators have from time to time attempted to incriminate a single individual bacterial micro organism for all cases Such a conception is quite untenable when a full complete bacterial investigation is carried out on many hundreds of cases, and it becomes clear that an hypothesis must be sought which will explain (1) The various types of micro organisms involved (2) their widespread "domestic distribution, and (3) the fact that a patient with chronic nasal catarrh, septic tonsils, and deplorable teeth can carry on for years without any sign of rheumatic joints or fibrositis

The only possible hypothesis which will stand up to such a demand is the one upon which all our treatment at the Charterhouse Rheumatism Clinic is based, namely that the rheumatic manifestation is a tissue reaction to the normal domestic micro organisms or their toxic products But even then why do some people get rheumatism?

The normal commensal micro-organisms are outside the body and are prevented from entering beneath the protecting membrance by the fact that they suffer immediate dissolution as a result of the natural immunity When, however this protective mechanism fails, a bacterial invasion gains ground *within* the tissues Sooner or later sensitization occurs, and then follow the distal tissue reactions which manifest themselves clinically as the various forms of rheumatism Although this may appear a sweeping hypothesis it is a view which is held by many observers in both hemispheres [*ia 16*], and it is irrelevant to expound further or use more valuable space on the subject here where we are discussing practical therapeutics

Since therefore we teach that there is a microbic factor in every case what are the microbes involved? These organisms being almost entirely domesticated or commensal, the importance of chronic foci of infection becomes obvious Except in rare instances—at least in this country—the

microbes involved are streptococci and staphylococci (the former the more frequent, the latter the more serious)

For the technical data of the bacteriology the following publications can be consulted *Annals of the Pickett Thomson Research Laboratories* [2a] and Crowe [2b]

Streptococci (*a*) Haemolytic streptococci are, we believe, rare as an infecting organism in rheumatic diseases We are definitely of the opinion that they are not the cause of rheumatoid arthritis (Acute rheumatism is outside the present survey) These statements are qualified by the fact that to run a streptococcus a true haemolytic variety, it is quite insufficient simply to observe its growth on a blood-agar plate Haemolytic streptococci are almost invariably positive on pathogen selective blood culture (*vide* below) and they are not to be observed in any way preponderating, in several hundred cases of rheumatoid arthritis

The non-haemolytic streptococci, comprising the subhemolytic and viridans group found about the body, are in enormous numbers of different varieties The Thomson brothers have isolated and photographed somewhere about 250 different ones—and they are intensely type specific These are the commensal micro organisms of importance in rheumatic arthritis Owing to their intense specificity it is logical therefore to conclude that it is essential that a therapeutic vaccine, whether autogenous or stock must be extensively comprehensive or polyvalent This is a fact of much importance To facilitate the effectiveness of this comprehensive nature of the vaccine we consider it of fundamental importance to employ the macroscopic method of differentiation made possible by the employment of chocolate medium (75 per cent heated blood-broth agar [3])

Staphylococci, on the other hand are much less type-specific, and further, they do not appear to lose their properties on subculture as do streptococci For the former then a stock vaccine must be made from freshly isolated organisms With staphylococci a few strains of the main different varieties are sufficient but nevertheless must include the three main groups of *Staphylococcus aureus*, *flavus*, and *deformans*

No doubt a great many other factors play a part Heredity is important Chill damp, any cause of lowered resistance local or general and particularly such factors as influenza, shock and worry may provoke an attack Age climate, metabolism glandular aberration, intercurrent disease, &c, all or any of these may be responsible for the initial lowering of resistance We are sure, however, that by the time rheumatism is manifest clinically the infective factor is present in all cases in some such as a chronic hip joint it is very difficult to demonstrate, in others, such as infective arthritis, it is the primary feature of the picture

The reasons why we think that even in the most chronic hip without any sign of bacterial invasion there is a bacterial element are firstly, that it is impossible to draw a line between such a case and that of an active infective arthritis secondly that these cases are often extremely

[illegible]

[illegible]

[illegible]

(3) [illegible] A general constitutional [illegible] attacks the young woman [illegible] [illegible] all ages in both sexes [illegible] the last years. Joints [illegible] of the extremities. The [illegible] stages but the synovial [illegible] [illegible]. Other typical [illegible] sweating [illegible] the palms [illegible] wasting, a raised blood [illegible]. In the later stages [illegible] of the fingers develop [illegible] this occurs.

[illegible] —This is also a general [illegible] involved. The hands and [illegible] [illegible] frequently. There is [illegible] symmetry [illegible] not the [illegible] joints [illegible] rheumatoid arthritis. The hip [illegible] vertebra[illegible] the [illegible] arthritis. These usually [illegible] able X-ray changes possibly [illegible] calcification but no [illegible] differentiating [illegible]. This form of disease may [illegible] an active form of [illegible] since the end results [illegible].

[illegible] and longstanding [illegible] of arthritis [illegible] [illegible] arthritis [illegible] [illegible] properly [illegible] arthritis [illegible]

(4) *Spondylitis* [illegible] which has been variously called spondyl[illegible] [illegible] spondylitis [illegible] Marie Strumpel and [illegible] [illegible] bamboo spine and poker back. [illegible] the young adult and [illegible] early stages can only be diagnosed [illegible] X-ray photographs [illegible] where bilateral [illegible] [illegible]

The [illegible] is typical [illegible] attacks of rheumatic symptoms [illegible] the young adult of both sexes. It may be a knee or foot or any other [illegible] the early stages or in the back or over the [illegible] joints. [illegible] the active type, indulging in all sports and [illegible] [illegible] the back becomes involved [illegible] finally there [illegible] with calcification and all the textbook [illegible] stage of poker back. Treatment [illegible] [illegible] vaccine or both is however [illegible] [illegible] diagnosed in the earliest stages. [illegible] [illegible] for rheumatic [illegible] [illegible] must have [illegible] of the fact [illegible]

[illegible] from [illegible] osteoarthritis of the [illegible] but the vertebral ligaments are

...ified from the p... ...ibrous or osteo-arthritis, ... hard osteophytic ...

It is extremely imp... ...t arthritis in their ear... ...ingly on an accurate ty... ...diagnosis and nomenclature ... to be suspected where nerve sym... ...atrophy of the extremities but sinc... ...s compar... ...it is the form of arthritis le... ...met with in the Ne...

Type	...	...	...	...
...ar and extra-articular ...mation	N...	...	N... or slightly ...	N...
Osteo-arthritis	...	...	... normal	...
...ic infective arthritis	...	...	...	...
...ic infective arthritis	...	...	...	...
...	...	...	...	...

Although ... ...ment of ... ...only ... ...ble ... ...ly and ... ...ion to ... ...ion ... ...but ... ...date

(*a*) *Simple Arthritis.*—... ...Scott that it ... ...should ... ...rely ... ...arthritis ... ...cannot ... ...to which it is possible ... ...fall into the ... ...are likely to ...

(1) Rheumatoid arthritis ... ...bacterial infection ...

(2) Gonorrhœal arthritis. ... ...injuries and ... ...for ...

[illegible]

[illegible] operations in th[illegible] type diagnosis. The cell [illegible] hæmatocrit value [illegible] and is rapidly determined as [illegible] factor in the [illegible] of the erythrocyte sedi[illegible] rate by Wintrobe's method, which we believe to be the most [illegible].

[illegible] Sedimentation [illegible].—In the Wintrobe technique, the [illegible] is prevented by solid [illegible] and ammonium oxalate, and [illegible] mm. in diameter and 100 mm. in length is measured. In

[illegible] rather [illegible]
[illegible] pathogenic [illegible]
[illegible] cases however [illegible]
[illegible] severe [illegible]

The [illegible] the [illegible]
[illegible] [illegible]
with [illegible]
[illegible]
intestinal [illegible]

Having [illegible] these [illegible]
to the [illegible] determine [illegible]
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infecting [illegible]
to make [illegible]
will not [illegible]
polyvalent [illegible]
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One [illegible]
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The majority [illegible] and [illegible] by the [illegible] of [illegible] and [illegible] [illegible] [illegible]

[redacted] time. This was [redacted]
[redacted] tions
[redacted] this [redacted] was ten times [redacted]
[redacted] oil emulsion. [redacted] very unpleasant [redacted]
[redacted] with loss of appetite [redacted] to [redacted]

[redacted]

[redacted] SULPHONAMIDES [redacted]
[redacted] Medical [redacted]
[redacted] 10
[redacted] W. [redacted]
[redacted]
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THE TREATMENT OF GONORRHŒA BY M. & B. 693

By SURGEON LIEUTENANT-COMMANDER H. I. BELCHER, R.N.

In July 1938 a short note by Bowie of the Aberdeen Public Health Service appeared, describing the treatment of gonorrhœa by M. & B. 693 [redacted] in the *British Medical Journal*. This statement aroused my interest and I obtained a supply from the manufacturers. The results were [redacted] and a special report was made to the M.D.G. who [redacted] to obtain more of the drug.

This survey gives the results in 1,000 cases of gonorrhœa and shows that the age-old problem of the treatment of this disease is in a fair way to solution. The number of working hours lost in this disease must be enormous, and any further aid in its cure will save a huge [redacted] the loss is of vital importance.

GENERAL SURVEY OF CASES

This series ranged in age from [redacted] to 41, and in the [redacted] present from a few hours to [redacted] days. Of the cases [redacted] had one or more previous attacks of gonorrhœa [redacted] a few patients entries on this incident have slipped over for many [redacted]

massaged—urethras are made and examined. The urine passed after prostatic massage is centrifugalized and the deposit if any examined.

Provided that there are not more than two pus cells per field a urethroscope is passed and if the urethra is normal gonococci is discharged to duty.

If there should be more than two pus cells per field, he is put back for four days and prostatic massage again performed until smears and urine pass the above test.

On being discharged to duty the following slip is attached to his medical history sheet:—"This man has been treated for gonorrhœa with M & B 693. For statistical purposes it is requested that particulars of any (a) relapse (b) reinfection strain whether (a) or (b) is considered the most likely, occurring up to a period ending the period is six months from date of discharge to duty) may be communicated to G. U. S., R.N.B. Portsmouth."

Sixty seven of the patients have been examined at two four six and eight weeks after being discharged to duty. Their prostates and vesicles were massaged all with negative results except two who reported with a fresh discharge one five weeks and one six weeks after discharge to duty. In all over a period of seven months nine relapses have occurred. These will be discussed later.

Results of Treatment.

Table III.—Number of Days on Venereal Attendance.

Days	Cases	Percentage
14 to 21	80	80
21 to 28	1	14
28 to 35	1	6
35 and over	80	20

It will be seen from the above figures that 80 cases responded very rapidly to treatment—of those cases 81 (90 per cent.) were in the first between fourteen to eighteen days. In fact I was not really satisfied until quite way through the investigation when it became obvious that the percentage of relapses and complications was very small that patients could safely be sent to duty two to three days after M & B 693 was stopped. Of the last 40 cases 11 have gone to duty in 12 days and 17 in 13 days—I prefer to be allowing one day extra for urethroscopy.

The most striking thing was the rapidity with which the gonococci disappeared in urethral smears. The average case was gonococci free in three days and even in the more resistant cases (except for 6 cases) the longest time was six days.

Thirty cases proved more resistant to treatment and this number proved unexpectedly high.

Further analysis of these cases is as follows: 16 had had two previous attacks of gonorrhœa, 6 had had one previous attack of gonorrhœa, 8 had had no previous attacks of gonorrhœa, 6 had had treatment for more than

before M & B 693 and 1 case developed a primary chancre days after treatment commenced

appear that a previous attack of gonorrhœa led to a somewhat to treatment perhaps by weakening the resistance of the infection and so tending to early spread of the disease to urethra and prostate In fact 24 of the cases had a mild shown by the presence of pus cells in prostatic smears and further details of these 24 cases are 18 to five days, 3 in fifty to fifty seven days, 3 in sixty to and 1 in a hundred and fifty one days The last case had from days on the attending list with a previous attack expected that all cases would respond to the drug and so

TABLE IV.—CASES RESISTANT TO TREATMENT

	No. of cases	Gonococci	Remarks	Total
	1	21 days	—	44 days
	1	10 days	Epididymitis 22 days	65 days
	3	28 days	—	44 days
	1	41 days	Epididymitis & acute prostatitis Still in hosp.	101 days
	1	18 days	Nausea vomiting collapse Drug stopped	4 days
		41 days	—	56 days

irrigations sulphanilamide and gonococcal to these the patients eventually

included but as gonococci were present in it was thought better to include it day on the third day was gonococci positive fourth day, after which no more could

DIET IN PATIENTS

must be taken in the diet of these patients—no eggs onions sulph are allowed in any form It has been comparatively easy this in R N Barracks Portsmouth in collaboration with the Paymaster Commander, as under the General Messing system can be obtained for a mess as a whole In consequence these been eliminated completely from the diet of the Venereal Mess this all ratings are individually warned about diet about the of saline purgatives such as Epsom Salts and about the taking White Mixture which is a great favourite

A red and white cell count is done on the day of admission and at weekly intervals for the next two weeks Any drop in the white cell count is very carefully noted In only one case has a serious drop in white cells been found, but fortunately he recovered without further complications.

[illegible]

Very early in the [illegible] treatment [illegible] a [illegible], but on [illegible] has [illegible] to return to this method, [illegible] patients [illegible] this treatment. In [illegible] to Dr. [illegible] complaint to the [illegible] during [illegible] it was [illegible].

The method adopted [illegible] in the following [illegible]. The [illegible] the third day and then [illegible].

Combined Treatment

[illegible] introduction of M. C. [illegible] among Command [illegible] daily. [illegible] elapsed [illegible] [illegible]

[illegible]

A [illegible] until the [illegible] [illegible]

[illegible]

[illegible]

[illegible]

The most striking thing [illegible] complete absence of complications [illegible] regards the disease to a very [illegible] in [illegible].

In this series of cases only three [illegible] per cent. of the [illegible] complications. Of these one is already [illegible] and is still under treatment in R. N. Hospital, Haslar. The other [illegible] arthritis and are still under treatment. One of these [illegible] previous attack of arthritis as a sequela to [illegible].

One other patient developed a peri-urethral abscess six [illegible] commenced. He has not been included in the series [illegible] discharged to R. N. Hospital, Haslar.

Relapses and Re-infection

During the seven months over which this series of cases has been collected nine cases (6 per cent.) reported with a recurrence of discharge. All were gonococci positive, and all returned from four to six weeks after original discharge to duty. Two of these cases were almost certainly re-infections. Of these cases three occurred in the early stages of the investigation, four in the middle period and two in the later stages. It would appear from this that one or two cases in the last thirty may be expected to relapse. In view however of the fact that two of the nine cases were probably re-infections, it seems that 6 per cent. is a fair estimation of the actual relapse rate.

Non-gonococcal Urethritis

Fifteen cases of urethritis in which no gonococci could be found have been treated by the same routine, with very varying success. Four cases were discharged to duty in from fourteen to eighteen days. Unit on the whole M & B 693 had little effect. It seems that in these cases sulphanilamide is more successful.

Conclusions

... M & B 693 has treated cases of gonorrhœa with M & B 693 and by ... is confirmed to be struck by its potentialities. The ideal dosage ... has not yet been decided and its effects on the chemistry of the ... are not fully appreciated, but as a killer of the gonococcus ... at present time no rival. It seems probable too that the vast ... of patients treated by it are cured in from seven to ten days. It ... is by no means indicated however, that the absence of discharge does ... cure. Case 6 in Table IV is a very good example of ... that must be taken to ensure that the prostate and vesicles ... clear. It is also essential that patients be looked at during ... months to ensure that cure is complete. In this ... colleagues ashore in that we ... It is here that a powerful drug such as M & B 693 ... rapid disappearance of discharge but possibly to no ... cure may be a source of danger in the spread of the disease. ... also safe to say that if the patient does not respond fairly rapidly ... treatment with not the most two courses of the drug he will not respond ... and resource must be had to some other method of treatment. ... a combination of sulphanilamide and gonococcal vaccine is the ... these.

Summary

The treatment is described of 150 cases of gonorrhœa with M & B 693.

The necessary standard for cure before discharge to duty is detailed.

40-44 tablets (20-22 grm.) will cure the average patient.

90 cases (60 per cent.) were discharged to duty in twenty-one days or under, but this time is being reduced as greater knowledge of the drug accumulates.

9 cases (6 per cent.) relapsed (3 of these being [illegible] within six weeks of being discharged to duty

Only 3 cases (2 per cent.) developed complications [illegible] tions aspect of the disease a minor one

Treatment should be started as soon as possible

It appears that previous attacks of gonorrhœa [illegible] more resistant to treatment

18 per cent. of this series had minor toxic manifestations [illegible] little import and 3 per cent severe toxic symptoms [illegible] lling the drug

Of all the methods of treatment of gonorrhœa in use at the [illegible] t seems that M & B 693 holds out the greatest hope for speedy cure

I would like to express my grateful thanks to Surgeon Rear-Admiral W. H. Edgar for his advice and encouragement in the early stages of this investigation, and to Messrs. May and Baker for their generous supply of the drug

REFERENCE

[1] Lloyd *et al.* *Lancet* 1938. M'Clelon Rollestone *et al.* *Lancet* [illegible]

SOME CASES OF BLANCHING FOLLOWING INJECTION FOR DENTAL LOCAL ANÆSTHESIA WITH NOVOCAIN

By Surgeon Lieutenant D. Derek Liddell, R.N.

A few cases of instantaneous blanching of areas in the distribution of the fifth cranial nerve and of some effects following [illegible] novocain for dental purposes have been collected and this note is put forward in an attempt to find a possible reason for these [illegible]

Case A. Injection.—Weak local anæsthetic (2 per cent. procaine hydrochloride and 0·0002 2 per cent. epinephrine) for the left [illegible] nerve. Technique. Indirect method.

History.—The patient jumped as the needle entered [illegible] injection. The injection was done quickly as the patient [illegible] On withdrawal of the needle the patient rubbed his face [illegible] his hand before rinsing. After rinsing the blanching was [illegible] inquiry the patient stated that he had gone blind in the left [illegible]

Description by Patient.—A feeling as if the needle had [illegible] round and round quickly during the injection followed by [illegible] of the left eye and seeing blood at the same time there was [illegible] flush and an apparent sweating of the forehead eyelids and cheek

The area was clearly demarcated and was traced with a blue [illegible] stretched from the corner of the mouth backwards to the [illegible] of the ramus of the mandible passing up to within half an inch [illegible] corner of the eye and continuing in a downward diagonal line [illegible] eyelids to the ala of the nose

[illegible] is hypersensitivity of the comm[illegible] deep sensation as there [illegible]

Observations.—The area of blanching [illegible] B and C). On the palate [illegible] and the middle of the palate [illegible] There was no anesthesia of the [illegible] normal or of the lingual nerve. [illegible] appointment although anesthesia [illegible] The blanching lasted for more than [illegible] point stated that the swelling [illegible]

Case 5. Injection.—Writes local [illegible] facial nerve for extraction of a first lower [illegible] There is still a small cystic cavity at the apex.

History.—The patient did not start at any [illegible] The blanching was noticed immediately after [illegible] mouth. The patient was in no way distressed and felt no nausea or realize that anything abnormal had occurred. [illegible] dentist surgery). It was also noticed that the [illegible]

Description by Patient.—A feeling that [illegible] syringe had run up into his cheek (the submaxillary [illegible] palate was different from the normal. The patient [illegible] his identity adequately enough to be of any further use.

Observations.—Immediate anesthesia of the [illegible] obtained. The area of blanching on the cheek [illegible] of the nose, spread over the zygomatic process and [illegible] the mouth and a small patch also occurred at the [illegible] No pupillary alteration or prominence of the eyeball [illegible] for about twenty minutes and the patient [illegible]

Case F (referred by colleague).—*Injection*.—Novocain [illegible] (as in cases B and C) for the inferior dental nerve. [illegible] method.

History.—The patient jumped [illegible] the injection was [illegible] Blanching occurred. Immediately considerable distress was [illegible] was noticed that there was ptosis of the left upper eyelid.

Description by Patient.—The patient gave a very [illegible] account when questioned later. He felt a hot flush sweep [illegible] his face to the temporal region and over the scalp. His mouth [illegible] and although he wished to inform the operator that something [illegible] happening he was unable to speak. At the same time [illegible] a curtain ? which passed from behind his eye, through [illegible] in front, sounding from the description similar to the fortification [illegible] in migraine. It can be seen that the patient was sufficiently [illegible] mentally to be almost in a state of hysteria. He felt that the [illegible]

[illegible] I did not realise until inquiries [illegible] but it was close]

The area of blanching covered the whole distribution of the maxillary and ophthalmic branches of the fifth cranial nerve including the scalp forehead cheek nose upper lip and nose The left eyelid was [illegible] tightly closed and the eye was everted in the position of rest The pupil was normal in size and the eyeball was not protruded There did not appear to be any loss of function of the muscles of mastication or facial expression The patient was very distressed and had to rest for ten minutes before any work could be attempted He also seemed to be suffering from palpitation but no observations were taken of the condition of his pulse Instrumental anæsthesia of the mandibular nerve was obtained The blanching lasted for two to three minutes, whilst the optic effects lasted for eight minutes The latter came to an end abruptly when the patient's forehead was being wiped and it was attributed by him to this act The patient was of a nervous temperament, and had very deep set eyes heavily lined and looked toxic

Attempts to find a cause for these unusual occurrences display a dearth of references Steadman [1] mentions that local vaso constriction may occur and has experienced two cases of blanching in the supra orbital and [illegible] region following sphenomaxillary injections he says that the adrenalin in the solution is the causal factor Similar cases have also been mentioned in a few communications to the various dental magazines but no definite suggestions as to reasons have been put forward

It may be assumed that the blanching and other effects in these cases could occur by two routes —

(1) By a local stimulation of the sympathetic nerves supplying the arterioles and capillaries of the cheek and palate or alternatively by a paralysis of the parasympathetic nerves, both of which are present in and surrounding the fifth cranial nerve

(2) By the injection of an adrenalin solution (0 0002 per cent) into a blood vessel which is then carried by the blood-stream to the affected part

Coleman [2] has suggested quoting a similar case that the injection entered the inferior alveolar vein was carried by the blood to the heart, through the pulmonary circulation to the left side of the heart then to the aorta and carotids and to the facial and ophthalmic arteries But without doubt, not only the time taken for this process to occur but also the fact that the blanching is unilateral and local rules out this theory

Macgregor [3] suggests that the blanching is due to the injection being inserted into the internal maxillary artery which in its first part occasionally comes into close relationship with the area through which the needle passes the solution being carried by its facial branches to the cheek and by its middle meningeal branches to the lacrimary and orbital nerves This explanation does not seem to be very satisfactory as it would appear that all the branches of the internal maxillary artery would be concerned

and that the area affected would not be local. However, it may be granted that there is a great possibility that the ill effects suffered in Case 1 were caused by a general constriction of the capillaries of the internal maxillary artery. This theory would adequately explain the mental distress and the optic effects. This constriction would have been caused by the stimulation of the sympathetic nerves around the main vessel being carried through it its length.

It is generally believed by most dental surgeons who have experienced similar cases that the blanching is caused by a stimulation of the sympathetic nerves running along the somatic nerve trunk of the inferior alveolar nerve the efferent impulse being referred to the skin. The stimulation is caused by the actual striking of the sympathetic nerves around the main trunk and is independent of any adrenalin or novocain solution being injected. Campbell [4] quotes a case where there is doubt whether any solution was injected. No theory has ever been put forward as to the means by which the impulse is referred to a different sections of the face or to the eye.

Campbell further remarks a fleeting, searching pain is occasionally seen in instantaneous anaesthesia of the inferior dental nerve in blood vessels. But in Case D no anaesthesia was obtained of either the inferior alveolar nerve or of the lingual nerve with which the needle might also come into contact and it is therefore unlikely that the somatic nerve trunk was struck. For this reason it is suggested that the sympathetic stimulation in this case came from striking the internal maxillary artery and its surrounding sympathetic nerves, without actually piercing the muscular wall. The fact that the stimulation was not as strong as in Case 1 depends on a lesser shock being produced owing to the needle striking less severely against the vessel wall.

The following points must be taken into consideration however if it is to be accepted that this blanching is caused by a sympathetic stimulation. It is not easy to understand why if the sympathetic nerves are stimulated in the inferior alveolar region the efferent impulse is not referred to the corresponding area. For it is believed that only efferent impulses are carried along the sympathetic nerves except in cases of specialized reflexes as in the corneal reflex where afferent impulses are sent to the spinal cord and then on to the appropriate muscle or organ.

No explanation has yet been given of the connection between the eye and the 5th cranial nerve. In Case A where the patient suffered in his left eye it appears that there was a temporary anaemia of the retinal artery or of the optic centre in the brain. Owing to the fact that the blindness occurred in this case on the same side of the face as the other symptoms it would seem to point to the possibility that the sympathetic stimulation took place either in the optic nerve distal to the optic chiasma or in the central retinal artery. As far as can be ascertained there is no sympathetic connection with the optic nerve other than that to the oculomotor nerves

It would be more likely than that the cause of the blindness was due to an aneurism of the internal artery. In case F, however, where the whole orbital and surrounding structures were in a state of rest, there was probably a similar aneurismal of the blood vessels supplying the 3rd, 4th and 5th cranial nerves which would also affect the levator palpebræ muscle and cause this paralysis. It is therefore suggested that in the latter case the sympathetic connection would be between the Gasserian ganglion, the ophthalmic division of the 5th cranial and the cavernous sympathetic plexus which in turn communicates with the motor nerves of the orbit.

In summing up it can be said that the blanching is definitely caused by arresting ischæmic stimulation by the mechanical means of a needle and that it is due to the solution injected. The suggestion that part of the pathetic paralysis could equally well produce similar effects is ruled out by the closeness of these nerves to the oculomotor nerves. It appears that if the main vessel is struck there may occasionally be a sympathetic complication reflected to some other part containing a similar sympathetic supply, whilst the normal efferent impulse is unaffected.

In both Cases A and D the stimulation came from striking, and possibly piercing the inferior alveolar nerve, and this same stimulation being carried through the Gasserian ganglion to the appropriate areas. The communications of the sympathetic system are so complicated and incompletely traced as to render it almost impossible to find the exact course by which these impulses are carried.

It is doubtful in cases B and C if they are comparable with the other cases, but it appears that the blanching was in the area of distribution of the infra-orbital nerve. These cases are an exception, in that the effects occurred in the same area as that stimulated.

The difficulty of explanation in Case D seems to lie in the fact that no anæsthesia was produced and therefore the main trunk could not have been struck. It is likely however that the needle struck, without piercing, the wall of the internal maxillary artery and that an efferent impulse was sent along the branches of this vessel.

The complication in Case F is the severity of the optic and mental reactions. It is believed that a severe shock could have caused the stimulation of both the ophthalmic and maxillary divisions of the trigeminal nerve and also the oculomotor nerves through the cavernous sympathetic plexus and that the mental effects were purely hysterical.

The fact that all these cases have occurred on the left side may be coincidental but it could be attributed to the operator's personal idiosyncrasy and that the writer finds that the right handed technique for injecting the left is more accurate than on the right.

Since the above notes were written a case has been reported by Kay [5], in which blanching in the area of distribution of the naso-ciliary nerve followed following a submucous injection close to the mental nerve; this was associated with hypersensitivity. This is comparable with Case D in

[illegible] there was an acutely [illegible] palan[illegible] [illegible]bility that [illegible]perator struck the [illegible] [illegible] of the long [illegible]l nerve and that a sm[illegible] [illegible] in k[illegible] [illegible]ded abov[illegible]

[illegible] [illegible]

[1] St[illegible] [illegible]
[2] Coleman *B[illegible]* [illegible] 63 [illegible]
[3] Ma[illegible] *[illegible]*
[4] Campbell *Ibid* 64 [illegible]
[5] Bay *Ibid* 66 No

A SIMPLIFIED MICROSCOPIC PRECIPITATION TEST FOR SYPHILIS

By Surgeon Lieutenant R Vaughan Hunsley

Various shide precipitation tests have been [illegible] on the diagnosis of syphilis These tests depend on the flocculation [illegible] emulsions of alcoholic extracts of normal organs rendered more [illegible] by the holesterolization by the serum of the patient if that serum is syphilitic and thus contains altered globulin fractions The flocculation [illegible] is a consequence of combination of the altered globulin with the lipoid emulsion particle resulting in a surface with hydrophilic [illegible] exposed

The following test is performed according to the method [illegible] by B S Kline of the Mount Sinai Hospital Cleveland Ohio [illegible] has been simplified so that it may easily be carried out by the Medical Officer of a warship serving on detached duties away from a laboratory where the more complicated sero-diagnostic investigations are possible

The diagnosis of syphilis—in the early stages of the disease when treatment should be commenced—is dependent on the history [illegible] of infection the appearance of a cutaneous sore or other manifestations of early spirochætal invasion and the microscopical demonstration of the causative organism of the disease by the dark ground illumination method in material from the lesion A positive Wassermann reaction confirms the diagnosis and a period of from three to four weeks from the initial infection usually elapses before the reagins appear in the patient's blood B S Kline states that using the purified antigen employed in the microscopic slide precipitation tests for syphilis a positive reaction may be obtained from the serum of a patient after as short a period as one week after the appearance of the primary lesion The test to be described enables the Naval Medical Officer to confirm his clinical diagnosis of syphilis in a suspected case to exclude syphilis with reasonable certainty in an individual case and to keep a check on his patients under treatment for syphilis especially when he has no ready access to a reliable laboratory

Only two reagents not normally kept in the Naval Sick Bay Dispensary

are required to perform the [illegible] the special antigen and the cholesterol. But [illegible] apparatus to prepare the antigenic emulsion. [illegible] compares more than favourably with the [illegible] and receptor and sensitized sheep's red blood cells [illegible] Wassermann reaction. The other reagents, distilled water and 0·85 per cent. saline solution are readily prepared. The apparatus necessary for the test includes a microscope slide, a wax pencil, Wright's pipette, a small mixing vessel, Hirschfeld-Pasteur pipettes (easily made), and two graduated measuring pipettes, one reading in tenths and the other in fractions of a cubic centimetre. A centrifuge is desirable to obtain the serum absolutely free from red blood cells, but in the absence of a proper instrument it is sufficient to allow the collected blood to stand until [illegible] when the clear supernatant serum may be pipetted off.

Preparation of Reagents

The Patient's Serum.—As [illegible] 0·01 c.c. of serum are required for the test, only a small puncture of the [illegible] is collected. The blood is best collected from the [illegible] in one of Wright's capsules; it is then centrifuged until the serum is clear. The clear serum is then pipetted off and is kept at 0° C. in a small test-tube in a water bath for half an hour. A suitable water bath is easily improvised from a beaker and a spirit lamp, and the temperature should be kept constant at 56° C. and carefully checked with a thermometer. This heating has the effect of increasing the flocculating capacity of the serum for antigen emulsions.

The Antigen.—In principle this is an alcoholic extract of the acetone insoluble fractions of normal heart muscle. Ready-made antigen may be obtained in ampules of 1 c.c. at a cost of a few shillings from the Commonwealth Serological Laboratory in Australia, or from any other serological laboratory, and 1 c.c. is sufficient to make enough emulsion for tests extending over a period of from three to four months. The makers usually advise discarding the antigen when a sediment forms in it; it is preserved satisfactorily at room temperatures and must not be placed in the refrigerator.

The Cholesterol Solution.—Any pure cholesterol may be used to prepare this. It is suggested that analytical reagents be used, and Merck's, Schering-Kahlbaum, or any other standard brand will be found to be satisfactory. A 1 per cent. solution of cholesterol in absolute alcohol is prepared by placing 1 gram of cholesterol and 100 c.c. of absolute alcohol in a glass stoppered bottle in a water bath at 50 to 60° C., and shaking frequently at fifteen minute intervals for three quarters of an hour until completely dissolved. The absolute alcohol must be pure.

The Sodium Chloride Solution.—100 c.c. of 0·85 per cent. sodium chloride solution are prepared by adding 0·85 gram of sodium chloride (analytical reagent) to 100 c.c. of distilled water.

[illegible]

The technique [illegible] formula is as follows. Into a [illegible] pipette using the pipette measuring [illegible] bottle is now held at an angle [illegible] of cholesterol [illegible] absolute alcohol are allowed [illegible] of the bottle. The bottle is then [illegible] about seconds. One of the antigen [illegible] bottle being again held at an angle [illegible] of antigen should be delivered and [illegible] pipette calibrated to deliver [illegible] promptly stoppered with a cork [illegible] thrown from bottom to end and [illegible] 4.2 c.c. of sodium chloride solution [illegible] and the bottle is stoppered again and [illegible] This is useful method of preparation [illegible] emulsion particles will [illegible] emulsion. When examined under [illegible] hours, the emulsion will show [illegible] but on keeping [illegible] is kept at room [illegible] have given satisfactory results for at least six hours. Although [illegible] to prepare the emulsion freshly each time especially when [illegible] and negative sera are not available.

The Slide.—A clean microscope slide is [illegible] are placed on each [illegible] by dipping a ring shaped loop of wire into [illegible] that is put smoking. The rings should be quite [illegible] rings that may be made with a wax pencil.

The Preparation of Glass Tubing Pipettes

Although only one of these is required several may be made. About 1 cm. of thin walled soft glass tubing of about ½ in. internal diameter is taken and the central portion [illegible] heated evenly and gently in a flame rotating the tube by the cool ends till the tube is being heated. When the glass is completely softened and the tubing sags in the middle it is withdrawn from the flame and the two ends [illegible] drawn steadily apart for about 4 in. care must be taken not to draw the tube in the flame. This produces a fine capillary pipette which should be broken in the centre

[illegible] of the capillary pipette should [illegible] it is fitted with a rubber teat and is ready for use

Technique.—A little serum is drawn up into a Pasteur pipette and three drops are placed in one of the rings on the specially prepared slide. The serum has been previously heated in a water bath at 56° C. for half an hour. The slide is now carefully washed out with saline solution and [illegible] prepared antigen emulsion taken into it. One drop of the emulsion is added to the three drops of serum. The slide is now rotated for about two minutes, the two fluids mixed, care being taken not to spill the [illegible] of the wax ring. Mixing may be facilitated by stirring with a pointed rod of a match or with a wooden applicator [illegible] of suitable length and sharpened. It will be complete at the end of two minutes. Clumping will have taken place if the serum contains [illegible]. The slide is examined under the low power [illegible] and is easily seen. It is quite definite and the [illegible] should be compared with a slide of the unused emulsion [illegible] to the difference in the appearance. A few clumped particles of undesolved [illegible] on the surface of the suspension must not be confused with the finer clumping that appears with syphilitic sera. Even in weakly specific sera though clumping may not be marked it is so generalized and characteristic that it should not be confused with odd clumpings that may be seen in a negative test. The degree of positivity is difficult to estimate from the one test but one drop of the emulsion may be put up with one, two, three, four, five and six drops of the serum and this will give an idea of what proportion of serum to emulsion is necessary for the test to be positive.

Control for the Test.—If possible known negative and positive sera must be put up with the emulsion, as well as the suspect serum. Ampoules of these may usually be obtained. If this cannot be done a known negative serum may be used as a control since if there is agglutination with this serum the test is obviously not satisfactory. If there is no agglutination of the control but there is agglutination with the suspect serum then the patient may fairly certainly be assumed to be positive and the test reliable. The control serum is taken from any person certainly free from syphilis and is prepared by centrifuging and heating to 56° C. in exactly the same way as the [illegible] tested.

Points of Technique.—It is emphasized that unless the above instructions are carefully followed the test may not succeed. The success of the test depends on cleanliness of the apparatus, purity of the reagents and thoroughness and accuracy of technique. In hot climates it is essential to prevent the slide drying while the mixing is taking place for three minutes. It is as well, therefore, to enclose the slide completely in a Petri dish or other flat dish containing a little moistened blotting paper and remove it only for examination. By duplicating the number of wax rings and using larger slides, any number of tests may be carried out with different sera at

[illegible]

[illegible]

In [illegible]

In conclusion [illegible]

R [illegible] A B M D [illegible] Syphilis [illegible]

THE DUTCH RED CROSS [illegible] IN THE ABYSSINIAN WAR

COMMUNICATED BY [illegible] H M [illegible]

Readers of the [illegible] Medical Journal [illegible] difficulty in recalling the [illegible] Sir [illegible] appeared in the October [illegible] remember the eminent [illegible] Medical Services the [illegible] co-ordinating medical [illegible] the Duce and his [illegible] results obtained in [illegible] of the Italian [illegible] Forces throughout the [illegible] Abyssinia were short [illegible]

In this abstract of a paper [illegible] Red Cross Field Ambulance [illegible] at the recent [illegible] 10th International [illegible] Documentation [illegible] Military [illegible] held at [illegible] in October last we see the reverse of [illegible] the picture—namely the appalling conditions of hygienic ignorance [illegible] and disease prevalent in the Abyssinian Forces. This Dutch [illegible] worked under [illegible]

with the Brit[illegible] [illegible]ving with the Negus Sur[illegible] Commander C[illegible] [illegible] translated the relevant portion [illegible] Dr Veneklasen [illegible]

The Dutch w[illegible] [illegible]ving as their administrative engineer who had [illegible] [illegible] demarcation of the frontiers between Abyssinia and French and Italian Somaliland His advice in matters of material and personnel proved invaluable He advised the use of camels to transport all stores, and they were able to smile at the British Red Cross whose twenty Trucks Bedford were soon [illegible] when the rains came and the so called roads became impassable [illegible] miles But the British scored during the dry weather when the [illegible] the miles behind They took with them a portable X ray [illegible] and an orthopædic table which packed into a valise Both these [illegible] invaluable

In the staff there were no females The author remarks that "Cetait [illegible] as they were working among savage tribes But he contends that the best advice of all is to take a good cook, one having well developed instincts of tidiness and order Nothing, he says is more [illegible] at the end of a long day's hard work than a dinner badly prepared and badly served They decided against taking a priest with them [illegible] to language and religious difficulties in dealing with Abyssinians [illegible] their arrival at Djibouti ce lieu de chaleurs infernales they were at once struck by the great number of the natives showing marked rickets in spite of the fact that they lived all day out of doors in the sunshine A description of various ailments seen in the streets of Djibouti follows

The Abyssinians the author states had really no organized medical [illegible] at all The wounded on the field of battle were left to the mercy of the Bon-Dieu et les hyenes The wounded soldier, unfit to fight and [illegible] himself was considered an encumbrance to the Army and on [illegible] became an object of derision and a burden to his family It was [illegible] people of Abyssinia who appealed to the Red Cross for help for the wounded it was the Negus himself

The Dutch Red Cross Unit first set out for Dessie 300 kilometres [illegible] of Addis Ababa On their journey they studied the populace, and [illegible] work, with the incalculable numbers of people they met suffering [illegible] and minimal bermas But they were astonished at the [illegible] of their Abyssinian guides who were perfectly fresh at the end [illegible] days journey which left the Europeans exhausted In the [illegible] moments the guides faced the great heat of the plains and [illegible] of the hills They slept in ice and snow at night without any [illegible]

On arrival at Dessie they were welcomed by the French Lazarists, who placed their buildings at the disposal of the Dutch Red Cross Unit [illegible] this town venereal disease was rampant and brothels were numerous Syphilis was rampant, and the populace demanded injections for this

Fresno from the Dutch, and refused to take "No [illegible] answer Gonorrhœa appeared to be far less common Nearly all the population appeared to suffer from rheumatic complaints apparently due to the vagaries of the climate, spells of great dryness being succeeded by months of incessant rains Many of the people come asking for remedies for intestinal troubles Most Abyssinians appeared to suffer much in this respect When their children are one week old only the parents commence to feed them on rancid butter, which they consider to be most nourishing This soon causes diarrhœa which sometimes lasts their lifetime If a mother cannot nurse her child, it is put on heavy foods at once As a result, it seems, the Abyssinians suffer much from constipation in later life They take purgatives for this, in the most astonishing doses Often the Abyssinians were seen to take doses of castor oil ten times greater than any that are prescribed for adult Europeans

One of the first things the Dutch were called upon to do was to cure the Emperor's favourite dog The animal was obviously very ill While under observation, it had a rigor Quinine was given without success A blood examination was done and parasites were seen (Pyroplasmosis) Salvarsan was therefore injected The resultant cure was so striking that the reputation of the Dutch doctors was firmly established for ever

They now established their Base Hospital and settled down to work At the same time they sent out an advanced party to Quorum, near Lake Ascangi This party nearly met with disaster as they were attacked by Gallas who mistook them for an Amharic Caravan These two tribes were lifelong enemies

Here follows a description of those age old tribal customs which lead to the mutilation of the dead and wounded on the field of battle

While the Dutch continued their Red Cross work at Quorum they were frequently subject to gas attacks by the Italians, being sprayed with mustard gas from aeroplanes When the Abyssinian soldiers felt this rain of fine drops they used to flee riding their mounts into the nearest hills only to realize after a few hours that their heads shoulders and buttocks were already burned The buttocks and crutch were attacked by the mustard which had fallen on the saddles of their mounts The Dutch had not bargained for having to treat mustard gas burns and did not know what to do They decided to treat them as ordinary burns and used a solution of 5 per cent tannic acid The results were excellent but whereas while under treatment, the tanned areas matched the Ethiopian skin, when these areas were healed they were white, to the dismay of the Ethiopian whose skin was changed in spite of this traditional impossibility A strange effect was produced, a black body with white head white shoulders, and white buttocks During the first week 200 cases at least came daily for help It was extremely difficult to deal with them as nobody had any idea of waiting for his turn to be dressed Only a whip to the back could have controlled the crowds, who fought to be treated

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Quoram is situated at 6,000 metres altitude and at this height mustard volatilizes very rapidly Most of the cases suffered from lacrimation, coryza and temporary blindness, if they had been caught in the thickest part of the mustard rain But it seemed clear that people of pigmented skin were less susceptible to its toxic effects than white people were

Mustard gas caused other troubles The mules who grazed upon contaminated grass, were burnt internally and died in a few hours In ordinary times bodies of men or mules on a battlefield are effectively picked clean to the bones in an hour or so by hyaenas and vultures But these scavengers would not touch corpses and carcases contaminated by mustard gas, and these were left to the flies and their larvæ which bred in thousands As there died daily a great number of mules, it is almost impossible to imagine the awful stench

Aeroplanes came over continuously, with few intervals, from 7 a m till 7 30 p m Life became almost unbearable The Emperor the British and the Dutch Red Cross Units had to seek refuge in caves in the mountains where work could be continued without interruption from air raids During these raids the Abyssinians showed themselves past masters of the art of camouflage

The caves were cold and wet, and had to be shared with numerous Abyssinian soldiers Nearly all these soldiers suffered from amœbic dysentery and skin diseases The cave of the Emperor was the Mecca of many wounded, some with gangrene of the limbs, some with head wounds exposing the meninges some with severe mustard burns, and some with wounds foully dirty and covered with flies All these preferred to remain near their Emperor in the hope that their wounds would attract attraction and monetary rewards rather than go for medical treatment by the British or Dutch ambulances

After a few weeks the Italians advanced and the Abyssinian Army fell back disorganized and demoralized by fear of air raids and infuriated at the sight of any white man they chanced to meet The Emperor departed to the north, and the British and Dutch went south On arrival back at Dessie these advanced units found that all the Red Cross Field Ambulances had been subjected to bombing except the Dutch

Wounded were arriving, these had made the journey from the front to Dessie, some 300 kilometres, through the country of tribes unfriendly to them, who had refused them food and robbed them of all their clothes, and even wounded them In this deplorable condition with heavily infected wounds, they arrived at the Dutch base hospital Crowds and crowds arrived All day long from 7 a m to 7 p m operations were performed unceasingly Six major operations a day was nothing unusual Wherever possible local and nerve block anæsthesia was used For skull and brain injuries blockage of the trigeminal and of the Gasserian ganglion was used For all injuries of the lower limbs spinal anæsthetics were used For forequarter shoulder amputations nerve block was used combined

[illegible] When a general anæsthetic was needed rectal form was used and no harmful symptoms were ever experienced [illegible] the least anxiety caused At the altitude of 3 000 metres where they worked, ether evaporated too quickly to be used as a general anæsthetic

As disinfectant and deodorizer a solution of 1 per cent ' Citopogeen ' was used and proved most effective They were very satisfied with a haemostatic called " Sangostop Tha very costly sera which they brought from Holland were never used No cases at all of gas gangrene or of tetanus were reported, either by the Dutch Red Cross units or by those of other countries Tha work was very arduous and the difficulties were immense For instance, the Abyssinians eat all their meat raw, and if they can't eat it at once they guard it carefully The wounded even tried to conceal their raw meat in bed with them

The control of food supplies was another problem The principal item of diet of the Abyssinian is a kind of huge biscuit made from flour These were cooked by women in the neighbourhood of the hospital They used dried mula droppings as fuel They were in the habit of bringing these biscuits to hospital in baskets which had previously been used to collect mula droppings and which had never been cleaned since they had been used for this purpose It was no wonder that intestinal infections were common. As an illustration of the fear inspired by air raids, it is related how a patient had had his leg amputated just below the hip and had been safely returned to bed in hospital A quarter of an hour later aeroplanes came over the hospital Tha doctors ran to their air-raid shelter To their amazement they found that the Abyssinian patient had got there first He had escaped from his bed and covered a considerable distance to the shelter by hopping on one leg As the Italian forces advanced the Dutch Red Cross Unit was forced to withdraw and return to Addis Ababa They did not flee before the Italians but before the vanquished Abyssinians who were now a murderous, savage plundering and unreasoning rabble, prepared to attack any and every European on sight, without discrimination of nationalities

Thus ends the narrative of the Experiences of the Dutch Red Cross Unit in Abyssinia

Clinical Notes

BILATERAL CORTICAL NECROSIS OF THE KIDNEYS

By Surgeon Commander F G Hunt M B R N

In December 1938 a case of bilateral cortical necrosis of the kidneys occurred in the Royal Naval Hospital Plymouth This is a rare and interesting condition, and is usually found in association with some accident of pregnancy, the occurrence in a male is of particular interest

The disease was first described by Jubel Renoy in 1856 in a girl aged 16 following scarlet fever A second case associated with pregnancy was very fully reported in 1918 by Bradford and Lawrence In 1930 a survey of the cases reported to that date was made by Scriver and Oertel They reported on thirty seven cases from the literature, and three of their own

Of these thirty two were associated with some accident of pregnancy usually retro placental h emorrhage Five were to males in association with the following diseases (1) Prostatic cancer without obstruction but with interstitial nephritis (2) pneumonia in arteriosclerosis (3) diphtheria (4) dysentery (5) pulmonary tuberculosis The remaining cases were, one of peritonitis in a female aged 10 and two cases in children with dysentery Since then about thirty cases have been added with an even more marked predominance of association with pregnancy

The disease is usually fatal though five out of Scriver and Oertel s list recovered There has been some doubt about calling these cases bilateral cortical necrosis as the fact of their recovery was considered incompatible with the pathological findings in the cases which died but the clinical picture leaves little doubt that they were true cases of this disease which had not progressed to actual necrosis

Recently five cases of death from industrial dioxan (diethylene dioxide) poisoning were reported and in three of these in which post mortems were done the kidneys showed bilateral cortical necrosis

Of particular interest to Naval Medical Officers is a report by Dudley from the Royal Naval Hospital Chatham of a series of cases of pyrexia (carbon tetra chloride) poisoning there in 1934 All the cases in that series recovered, but it appears to me that they too must be classified as this disease

As its name indicates the disease is a symmetrical necrosis of the cortices of the kidneys but in spite of the large number of cases reported and the careful study made of most of them, there is still no general agreement on the pathogenesis of this disease It is generally agreed that there is a disturbance of the vascular supply of the cortex but whether this is due to multiple emboli, pressure thromboses arterial necrosis of vessels or vascular stasis is not yet settled. The majority of authors seem to think that the necrosis is ischaemic and due to a thrombosis Jubel Renoy (1886) thought that emboli were the cause Jardine and Teacher (1913) think arterial spasm Oertel and Ash (1933) favour vaso paralysis and stasis Glynn and Bragge (1915) attribute it to toxic injury to the endothelium Hirst (1926) and Carson and Lockwood (1926) favour an acute toxic glomerulo nephritis in association with toxic injury to the vascular endothelium De Navasquez (1935) considered the condition a primary necrosis of the vessel walls He thought that there was no thrombosis but a coagulation of red and white corpuscles as there was little or no fibrin or platelet formation He states that it begins peripherally i e in the glomeruli and afferent arteries and extends proximally, the linked corpuscles being deposited in the glomerular tufts and becoming adherent to the walls and practically relining them —hence the anuria

The clinical picture is clear cut and definite—the outstanding feature being complete or almost complete anuria, starting in some acute infection, usually an accident of pregnancy, and generally in a case with no previous history of kidney disease. Many symptoms are reported: epigastric pain and tenderness, abdominal pain, vomiting, headache, drowsiness and visual disturbances; but none of these is constant, and with so many exciting causes, they cannot be definitely attributed to the necrosis but rather to the accompanying or exciting condition. Patients are usually alebrile, and relatively clear and bright mentally though unconsciousness has been recorded. Ash states that "there was a distinctly lower incidence of convulsions, headache and oedema than is seen in uræmia, and there was much less mental disturbance. A number of patients were perfectly clear mentally till a few hours before death."

A high blood pressure has been recorded in some cases, but generally the pressure is normal. Leucocytosis has been reported in several cases, but others, as in my case, had a normal white count. Œdema may or may not be present. The urine in these cases where any was obtained, showed marked albuminuria and the presence of red cells. Casts have not been reported. The blood changes are striking, and as might be expected show a rapid rise in the nitrogenous constituents with a not readily rapid rise in the creatinin content as distinct from the slow rise in interstitial nephritis. The clinical picture is that of acute obstruction, as in bilateral blockage of the ureters, or removal of an only kidney. The following is an account of the case which occurred in the Royal Naval Hospital, Plymouth.

H. J., aged 35, R.F.O. This Petty Officer reported sick on board his ship at 09.30 on December 15, 1938 in great distress. He was shivering, his teeth were chattering, and he complained of severe cramp like pains in his legs. He was put to bed at once with hot water bottles and blankets. About an hour later he was much better and was transferred to hospital for observation. On admission to hospital, temperature 102.6° F., pulse 120, respirations 20. He stated that he had had "a cold" for about four days, that on the previous evening he had a rigor and several at intervals of a few hours since then. He also stated that he had been sick in 1936 with "purpura" and that the attack had started with similar symptoms. His medical history sheet showed the following entries:—

Sick in H.M.S. *Galatea*, from December 1 to 20, 1935 with "purpura."

Reported sick again in H.M.S. *Galatea* on August 1, 1936, and was sent to Gibraltar Military Hospital, diagnosed "Purpura, essential thrombocytopœnia." He was invalided home from Gibraltar and arrived R.N. Hospital, Plymouth, on September 23, being sent to duty on October 19. Records show that the attack started with rigors, pyrexia, cramps in limbs, purpuric rash and severe hæmatemesis. There was no record of albuminuria or any kidney symptoms.

On admission this time, temperature 102.6° F., pulse 140, respirations 20. B.N.O. He complained of general malaise and cough. No more cramps in limbs. No history of vomiting. Stated that he had a taste of blood in his mouth, and there was bleeding from his gums. A purpuric spot about ¼ in. in diameter was present on the back of each calf. Nil else on body. N.A.D. heart or abdomen. A few scattered rhonchi in lungs. General condition good. That evening he complained of severe pains in his abdomen and started vomiting. Vomit at first contained altered blood, but later just bile stained fluid.

The next day (December 16) his bowels were opened, but there was no obvious blood in his stools. His face and forehead were covered in a deep purple blotch ending abruptly along the lower edge of his mandible. This was darker the next day and then gradually faded. No further purpuric spots developed.

On the 16th it was reported that he had not passed urine since admission to hospital the previous forenoon. A catheter was passed, but there was no urine in the bladder, and from then till his death at 16.10 on the 23rd, he had complete anuria with the exception of about ½ oz. of dark coloured urine passed on the morning of the 17th, this unfortunately was thrown away by accident.

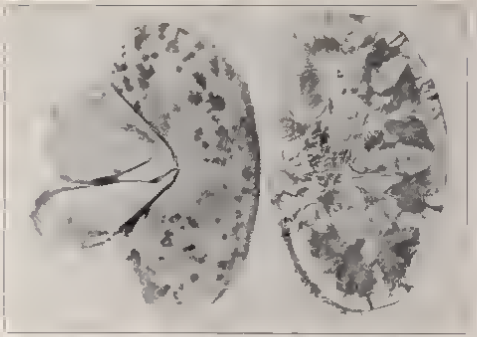


Fig. 1. Throughout the whole of the lung tissue there is extensive [illegible] with [illegible]

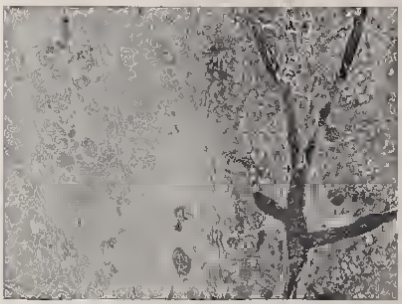


Fig. 2. Throughout the interlobular artery and its [illegible] the [illegible] part to left with few nuclear fragments the [illegible] right with numerous fragments and leucocytes. Hæmatoxylin and [illegible]

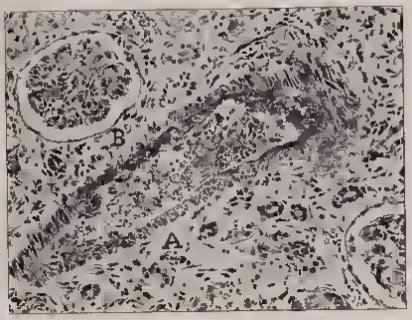


Fig. 1.—Old infarct of right kidney. A, area with partial necrosis of glomeruli and tubules; B, area with complete necrosis of medullary and cortical tubules and glomeruli. Haematoxylin and eosin. × 10.

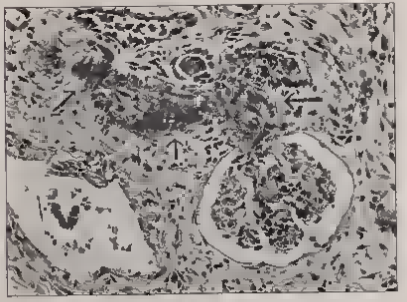


Fig. 2.—Glomerulus and adjacent tubules showing sufficient preservation to demonstrate necrosis. Haematoxylin and eosin. × 200.

The abdominal pains cleared up on the day after admission, and did not recur Vomiting but without nausea or distress, continued till the 18th, and recurred again on the morning of the 20th after which it did not recur Cough cleared up in two days Pyrexia gradually settled down and after the 19th the temperature remained normal or subnormal Except on the day of admission and the day of his death his pulse rate was normal Bleeding from the gums was present till the 19th and then cleared up, but on the 23rd his mouth was covered with blood stained sordes Herpes developed round his mouth and chin on the 19th

The outstanding feature of this case was that the patient looked and felt so well After his abdominal pains cleared up he was mentally bright and cheerful He ate and slept well had no headache or any complaints, and refused to believe that he was seriously ill

He remained like that till the 21st when he became rather drowsy and it was then noticed that he had twitching of the hands and plucking at the bed clothes when dozing, but he was still mentally alert and bright when awake That night he was restless and inclined to be delirious at times

On the 22nd he lay all day in muttering delirium, but when questioned answered normally and said he felt well He also took his food and would not allow an intravenous needle to remain *in situ*

That night he was delirious practically all the time very restless and difficult to restrain

On the 23rd he was very noisy and it was difficult to keep him in bed He could not recognize anyone or understand any questions He was however, surprisingly strong He remained in loud delirium till his death, which came on suddenly at 16 40 He never had convulsions

He was treated at first with gastric sedatives and ascorbatin and and later with sodium sulphate intravenously drip saline and glucose intravenously purgatives, hot packs and fluids *ad lib* He sweated a good deal but did not develop œdema anywhere though less fluid was found post mortem in his abdominal cavity

The following is a record of his blood urea and other investigations —

December 16	blood urea	60 mg per 100 c c	
" 17	"	412	
" 18	"	344	
" 19	"	302	
" 20	"	403	
" 21	"	474	
" 22	"	538	

Leucocyte counts—		Platelet count—	
December 18	8 000 per c c	December 18	64 000
" 20	6 800 "	" 20	96 000
" 21	5 000 "	" 24	160 000

Blood pressure

December 19 95 55 December 21 84/70

Permission was obtained for a partial post mortem which was performed on January 24 by Surgeon Commander J R. Brennan who reported as follows —

Body of well nourished middle aged male. Rigor mortis established Post mortem staining of back of trunk and limbs Well marked subcutaneous haemorrhages of forehead, cheeks nose and back of each calf Lips covered with blood stained sordes

Heart 13½ oz —normal Blood vessels—normal

Lungs left 25 oz— right 29 oz both normal

Abdomen about a pint of pale straw coloured fluid in abdomen Stomach and intestines—normal

Liver 70 oz —enlarged and pale

Spleen 5½ oz —appeared normal

Pancreas and suprarenals normal

Kidneys right 8 oz left 9 oz The naked eye appearances of both kidneys

similar Hard and slightly enlarged Capsules injected but stripped easily Cortices of both were pale and opaque (i e necrosed not desquamated by death)

The left kidney and portions of liver and spleen were sent to Dr W W Woodd consulting pathologist to the Navy, who reported as follows —

Macroscopic Examination —The specimens have been in formaldehyde solution

The *kidney* measures 12 by 6 5 by 5 cm and weighs 219 grm Thin cortex is pale yellowish brown and very opaque the radial cortical pattern is very indistinct The intermedullary cortex (columns of Bertin) has a similar appearance so that it is conspicuous as wedges of pale opaque tissue between the pyramids of red glistening medulla which has a distinct radial pattern Numerous dark red streaks (up to 0 5 cm broad) traverse the cortex radially and these correspond with dark red blotches on the smooth yellowish brown subcapsular surface The pelvis and ureter are undilated and appear normal they have a smooth grey lining without haemorrhage The attached portion of renal vein (7 cm long 2 2 cm in circumference) and its main tributaries in the kidney are empty and have a smooth pale purplish grey intima The attached portion of renal artery (3 cm long 1 3 cm in circumference) and its main branches in the kidney are empty and have a smooth intima

The portion of *spleen* measures 10 by 3 by 2 5 cm The capsule is wrinkled The pulp is moderately firm and dull greyish-purple The trabeculæ are distinct and the Malpighian bodies indistinct

The portion of *liver* measures 14 by 10 by 4 5 cm Its capsule is smooth and transparent Its cut surface is brownish grey and the lobules are distinct

Microscopic Examination —Kidney The greater part of the cortex and areas of the upper two thirds of the medulla are necrosed The necrosed tissue has the appearance that is characteristic of anæmic coagulation necrosis such as is found in infarcts due to arterial occlusion the outline of the tubules is well preserved and their epithelial cells are eosinophilous granular masses of cytoplasm devoid of nuclei most of these cells are still attached to, or slightly separated from, the basement membrane but some of them have become desquamated into the lumen of the tubules the capillary structure of the glomeruli is distinct but they and the distinct basement membrane of Bowman's capsule are both almost entirely devoid of nuclei A few small areas of cortex are not necrosed these are very shallow subcapsular areas and also a few narrow wedges immediately around interlobular arteries some of the latter areas extend through the whole depth of the cortex In these areas the connective tissue is swollen by œdema and capillary dilatation the tubules are narrow and contain red corpuscles fibrin and desquamated epithelial cells a few glomeruli contain areas of necrosis and are adherent to Bowman's capsule and in one Bowman's capsule there is a remnant of proliferated epithelial cells about six cells thick, mixed with haemorrhage In parts of the necrosed tissue especially near its junction with the small areas of non necrosed tissue there are numerous red blood corpuscles between the tubules and in the glomeruli in other parts there are numerous intact or partly disintegrated neutrophil leucocytes and a few other round cells

The interlobular arteries and almost all the arcuate arteries are normal All the interlobular arteries and the afferent glomerular arterioles are dilated, both in the necrosed and, to a less extent in the non necrosed areas of cortex but there are no aneurism or dissecting aneurysms In the necrosed and non necrosed areas of cortex the media is necrosed in parts of the interlobular arteries and in the majority of the afferent glomerular arterioles In these necrosed walls the nuclei have undergone karyolysis or karyorrhexis and the muscle fibres are replaced by lightly or deeply eosinophilous material like fibrin but only occasionally giving the positive blue reaction for fibrin with Mallory's phosphotungstic acid haematoxylin method this hyaline media of many of the vessels especially of the afferent glomerular arterioles is greatly swollen Most of the dilated arteries

are completely filled with thrombus composed of red corpuscles, leucocytes and hyaline areas and frequently also a net of filaments of fibrin. The thrombus contains a few spindle nuclei and distorted fragments of nuclei. Hyaline thrombi distending the intra glomerular branches of the efferent arterioles make them very conspicuous. The endothelial cells are usually necrosed at the areas of necrosed media. In a few sections of interlobular arteries and afferent arterioles the endothelium is separated from the external wall by a fibrinoid coagulum and this is sometimes associated with slight spindle celled proliferation and slight leucocytic infiltration in the intima and adventitia. But most of the vessels are devoid of inflammatory reaction.

There is much sudanophil fat in minute droplets in the walls of the interlobular arteries and efferent glomerular arterioles and in the neutrophil leucocytes and other phagocytes and in the cells lining some of the non necrosed tubules of the cortex.

Immediately outside the capsule of the kidney there are areas of oedema, formation of capillaries and slight proliferation of spindle cells and lymphocytes with lymphocytes and plasma cells.

Spleen.—The sections contain a few small areas of haemorrhages and incomplete necrosis. In these areas there is severe hyaline degeneration with swelling of the walls of the small arteries and arterioles but although there is great loss of nuclei in these walls they do not give the positive blue reaction for fibrin with Mallory's phosphotungstic acid haematoxylin. Most of them contain thrombus, and in a few the presence of spindle cells in the thrombus indicates early organization. The small arteries and arterioles in other parts of the sections show less severe hyaline degeneration which is not associated with so much loss of nuclei. The capillary venous sinuses of the pulp are inconspicuous and the pulp is abnormally rich in endothelial cells and reticulum cells.

Liver.—There is no abnormality in the liver, apart from degeneration of a few cells in the centres of the lobules, which is not associated with appearance of sudanophil fat.

Conclusions

This patient had two previous attacks of purpura one two years and the other three years before death. In the third attack he died of anuria. The anuria was due to bilateral cortical necrosis of the kidneys. Areas of medulla were also necrosed. The necrosis appears to have been due to ischaemia from thrombosis in the interlobular arteries and afferent glomerular arterioles and in a few arcuate arteries. The thrombosis appears to have been produced by hyaline degeneration and necrosis, occasionally fibrinoid necrosis, of the walls of these vessels. It is well known that the small arteries and arterioles of the spleen are commonly affected by hyaline degeneration but in this spleen there were small areas of haemorrhagic necrosis associated with severe hyaline degeneration of these vessels. The cause of the arterial and arteriolar hyaline degeneration and necrosis was not established.

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FATAL ANAPHYLAXIS

By Surgeon Commander O. H. [illegible] R.N.

I recently submitted a short article for publication in which I [illegible] that immunization against scarlet fever [illegible] value is not established as one which reduces the mortality [illegible] of this disease in the latter is apparently no longer the scourge [illegible] used to see twenty years ago but one which enables [illegible] illness having all or most of the clinical signs of scarlet fever [illegible] to isolate cases and returning the case to duty after a period [illegible] without either harm to the patient or apparent spread of [illegible] Once the diagnosis of scarlet fever has been made isolation must be instituted upon The point, which I wished to emphasize [illegible] of the number of days sickness The reactions to the [illegible] were not severe and the loss of time from those reactions was [illegible] by isolation for forty two days

The following case has altered my views to the [illegible] although a recrudescence of such a case is extremely unlikely the [illegible] immunization do not justify a repetition however unlikely of such a tragedy

On February 13 A B aged 13 received [illegible] with eighteen other Naval cadets his first immunizing injection of Parke, Davis's scarlet fever streptococcus toxin (500 S T D) at 19 00 There were no immediate ill-effects He turned to as also did several other boys and felt rather sick This is quite a usual occurrence after these injections In fact it seems to be the normal reaction of the small boy of 13 to any form of treatment which is at all out of the ordinary The actual vomiting, if it occurs usually takes place at the most inopportune moment and unfortunate place At about 20 45, the cadet went to the heads, and was seized with acute abdominal pain Having been seen by the Matron and a medical officer he was within a very short time in the Sick Quarters, where I saw him The boy was seized every two or three minutes with violent abdominal colic During these spasms the abdominal wall became rock hard and the expression "tied in knots" very aptly describes the condition The patient was pale cold and shocked The possibility of anaphylaxis was not overlooked but the picture appeared to be one rather of an acute abdominal catastrophe Volvulus intussusception and mesenteric thrombosis all seemed possible Between the spasms of colic the abdomen appeared to present no abnormality Warmth and rest with increasing intervals of time between the spasms of abdominal pain gradually improved the picture, and by 03 00 the pain had ceased the shock was less and the condition seemed stationary It did not seem advisable to give any active stimulant it was a question rather of watching for some definite sign to appear to indicate the exact cause of the condition By 07 30 it was obvious that ground was being lost and that the collapse must be treated even at the expense of an abdominal lesion Half a pint of commercial (0 85 c.c.) was given with little or no beneficial result Soon after adrenalin (3 m.m.) was injected and the volume of the pulse improved for a short time Rectal saline with glucose was not retained for sufficient time to have any effect The resultant motion from the treatment contained a good deal of mucus and was very offensive During the course of the forenoon it was obvious that a right sided failure of the heart was taking place A repetition of the adrenalin and strophanthin but (1/60 gr.), had no effect and the patient suddenly and completely collapsed at 14 15 dying in a few minutes In addition to the restoratives mentioned above oxygen was administered at frequent intervals and brandy was given twice The patient was conscious comfortable and apparently in no sort of mental distress, as soon as the spasms of colic ceased He merely slipped

slowly and surely downhill and no stimulant had anything but a slight and most transitory effect It seemed that nothing could stem the steadily increasing collapse which ended fatally

By permission of Surgeon Rear Admiral Syms, a post-mortem examination was carried out by Surgeon Commander Brennan at the Royal Naval Hospital, Plymouth A thymine gland weighing 1½ oz confirmed the diagnosis of anaphylaxis I am given to understand that Surgeon Commander Brennan is forwarding the details of his examination for publication in the Journal

AGRANULOCYTOSIS DUE TO SULPHONAMIDE

By Surgeon Commander T L Cheavl M R C P R N

A Chinese petty officer, aged 34, was treated during late December 1938, and early January 1939, with sulphonamide for gonorrhœa He was given 72 grms, as follows 4 grm for nine days none for a week, and then 3 grms for twelve days—in short the course suggested by Cokkinis (*Lancet*, August 1938) At the end of the course on January 8 he showed signs of malaise sore throat (some grey patches being visible on the tonsils and post-pharyngeal wall) and slight jaundice, the temperature being 101 8° F The symptoms thereafter increased and the pulse-rate rose steadily He was sent into R N Hospital, Hong Kong, January 11

On admission to R N Hospital the outstanding signs were grey sloughs on the buccal pillars and posterior pharyngeal wall and a pulse rate of 140 The patient was slightly icteric, and toxic to the point of occasional delirium The temperature was 101 5° A blood count showed red blood corpuscles 3 890 000 and white blood corpuscles 1,400 of which polymorphs were 7 per cent, lymphocytes 83 per cent monocytes 9 per cent and eosinophils 2 per cent. (On board ship on January 3—i e a week earlier—the red blood cells were 4 870,000 and white blood cells 5 200) The urine showed the presence of albumin and bile but only fragments of casts

He was treated at once with 10 c c of sodium pentose nucleotide and 2 c c of hepatex intramuscularly, and a blood transfusion (one pint) was given without incident two hours later The nucleotide was repeated a little later in the day In spite of all treatment the patient lost strength with great rapidity and died ten hours after admission

One may perhaps point out that, though sodium pentose nucleotide is at present prescribed for agranulocytosis no proof exists that it ever does any good in this condition for as Krauke and Parker [1] have pointed out it is impossible to say that any subsequent improvement is not due to the concomitant removal of the cause Further P Plum [2] and D Hall [3] treated eleven cases with the drug and had ten deaths whereas the latest textbook [4] mortality of untreated cases is given as 75 per cent and lastly stimulation of a damaged structure is not a form of treatment pleasant to contemplate

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A CASE OF SUBACUTE NECROSIS OF LIVER WITH ASCITES AND RECOVERY

By Surgeon Commander S G Weldon M B D P H R N

Recovery following jaundice and ascites is rare McGabe and Harper had two cases —

Case 1 —Male, aged 36 van den Bergh delayed direct developed ascites one month after admission paracentesis three times after which fluid did not form again

Case 2 —Female, aged 35 A diabetic had been taking "Cinchophen" three tablets daily for two months Ascites subsided without tapping Her condition two years later was good

They state that in former literature only two cases are on record, and particulars of these cases are quoted

The causes of the condition in the various cases were considered due to Arsphenamine, 1 stone 1 presence of gland against common duct 1 cinchophen, 2 infectious catarrhal jaundice 2 no specific cause 3 The average duration of the jaundice was three to four months with a prodromal period of two to four weeks but in one case it lasted for over a year

A laparotomy was not performed in any of this series thus none of them were proved by biopsy The luevulose tolerance test was not carried out

L J T W aged 26 leading seaman was admitted to the Royal Naval Hospital, Haslar on November 15 1937, with jaundice He had no other complaints except slight nausea and abdominal discomfort for the previous two days He gave no history of previous jaundice, administration of N A B the taking of drugs or the use of chemicals He had had no previous illnesses of note He had been accustomed up to a year ago to drink eight to nine pints of beer a day He was moderately jaundiced the liver was palpable two inches below the costal margin, but not tender No other abnormal clinical signs were found Blood pressure 120 80 mm Hg The urine contained bile the blood count and picture were normal The Wassermann reaction was negative The van den Bergh test showed a direct biphasic reaction, and indirect 16 V D B units With opacol X ray the gall bladder did not fill The jaundice became very deep and was still intense, when on December 13, 1938, oedema of the feet commenced The urine contained an occasional trace of albumin but no casts Blood urea was 0 035 per cent. Urea clearance test 89 7 per cent of normal function On December 25 1937 there was gross oedema of the back and feet, and commencing ascites. The van den Bergh test gave a direct biphasic reaction and 11 units

The ascites gradually increased in amount and by January 3, 1938, necessitated paracentesis, when 12 pints of yellowish fluid were withdrawn From then on the patient vomited occasionally was very drowsy, being roused only with difficulty, had urinary incontinence and was in a dangerous condition

The oedema rapidly disappeared from his legs and some five days later his condition was very much better the oedema and ascites then began again, and slowly increased Paracentesis was again performed on January 14, 1938, when 10 pints of fluid were withdrawn He was then tapped about every ten days The jaundice was much less marked but persistent

On February 9 1938 an exploratory laparotomy was performed under a general anesthetic by Surgeon Commander T N D Arcy

The liver was found to be somewhat shrunken in size and of a leathery consistency—its surface was studded with nodules varying in size from a pin's head to areas of 3 in by 2 in, and raised $\frac{1}{4}$ in above the surface of the organ The nodules were firm in consistence, rather purplish in colour and were not

umbilicus] There was a softer mass of new tissue in the portal [illegible] A small nodule was excised for biopsy and the raw area was closed with [illegible] and portion of omentum without much haemorrhage A Talma-Morison (Nuffield modification) operation was carried out to the right of the [illegible] and the roll of omentum was spread out in the subcutaneous fat

Histological report on liver nodule Subacute necrosis of liver [illegible] regenerating liver cells surrounded by a stroma of degenerated liver cells infiltrated vacuous sinusoids, endothelial cells many young bile ducts polymorph leucocytes young fibroblasts and some fibrous tissue After the operation the patient's general condition was good and it was obvious that the omental graft was drawing away a considerable amount of fluid

On February 21, 1938 there was a slight amount of fluid in the abdomen but it was not increasing There was slight swelling and tenderness in the region of the omental graft The urine was free from bile and the stools were normal in colour There was no dulness to percussion over the liver

The ascites gradually resolved and the liver dulness returned and increased, so that on March 21 1938, there was no fluid The liver dulness was nearly down to the costal margin and the patient was up and about

On March 30, 1938, Rouchat's test was positive for bile pigment Icteric index 3, van den Bergh direct biphasic and one unit Urine urobilinogen negative, urobilin positive (excess) The sedimentation rate, blood count blood picture, and blood urea were normal throughout The Wassermann and Kahn reactions were negative The urine other than showing bile and a trace of albumin in the earlier stages of his illness, showed no abnormality Throughout the acute stages of the illness he ran a continual low pyrexia of 98 4° to 99 5° F with an occasional rise to 101° F The pulse rate was normally 55 to 65

It was unfortunate that at no stage was a lævulose or galactose tolerance test for hepatic efficiency carried out

He was revalided and discharged to his home on May 6 1938 after having been fitted with an abdominal belt His skin appeared somewhat sallow, but he said that this was normal

He was seen again on August 21, 1938 and his general condition was very good He was working, and cycled five miles a day he had had no apparent attacks of jaundice there was no trace of ascites Blood pressure was 160/90 mm Hg and the liver dulness was slightly diminished On March 21 1939 he was re-examined and his general health was very good, no recurrence of jaundice liver dulness appeared normal and there was no ascites

In the St Bartholomew's Hospital Reports for 1936, there are reported twenty cases of idiopathic jaundice associated with subacute necrosis of the liver There were often several attacks of jaundice of increasing intensity They were alcholic

The Wassermann reaction was done in eleven and found negative There was no history of alcoholism Noon had taken drugs There was no infective organism of Weil's disease

The lævulose tolerance test was done in six and a rise of 30 mgm per 100 c.c. above the fasting level found in all indicating hepatic insufficiency The liver was found enlarged in fourteen cases a laparotomy was performed in twelve the liver was found freely or coarsely nutmeg with yellow mottling on the surface A piece was removed for histological examination in each case

The liver substance was composed of multiple yellow nodules with grey to red coloured substance between them

Histologically the appearance was that of subacute necrosis Seven cases died within five days of operation—one from hæmorrhage from the liver (where the piece was removed) one from hæmorrhage from wound and five from hepatic failure. In six the spleen was found palpable Ascites was definite in two cases,

[illegible] the stages and after a long attack of jaundice but was present just [illegible] in a number of cases All cases died

The conclusions they came to were, that the nature of the causal agent was unknown the parenchymal cells were chiefly affected, that the regenerated tissue was capable of carrying on the functions of the liver, that the jaundice was due to lack of liver tissue, or inability for bile to escape from the newly formed liver cells that the ascites was due to fibrosis

In the case described in the article no definite fibrosis was found in the small piece of liver removed for biopsy—later the liver regained its normal size—ascites did not recur, and his liver function was apparently normal fifteen months after his initial illness

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[2] St Bartholomew's Hospital Report for 1936

A CASE OF KIENBOCK'S DISEASE

By Surgeon Commander J. Keevil, M.D., R.N.

This disease was first defined by Kienbock in 1910 [1] and reports of its occurrence are so rare that the most authoritative paper on the subject remains that written in 1932 by Mouat Wilkie and Harding [2]

The condition consists of a progressive necrosis and sclerosis of the carpal semilunar bone consequent on interference with the blood supply It was compared by Kienbock with Kummel's disease of the vertebral bodies and it may also be grouped with Legg Perthes disease of the femoral head, and Freiberg's disease of the second metatarsal head

Its predominant occurrence in adult males in the right wrist and among manual workers, supports the aetiology of trauma either single or repeated The semilunar bone at the wrist is exposed to compression when the hand is forcibly dorsiflexed, and Muller [3] has given it as his opinion that repeated minimal traumata may cause such vascular interference as to result in degeneration of the semilunar bone This view is supported by other authorities [4]. In such an event it must be regarded as an occupational disease, and an employer's liability

This liability may be incurred in the early stages of the condition when there is slight swelling and tenderness over the semilunar with pain and limitation of active and passive movements At the stage the attributability may be difficult to establish or it may arise later when the bone finally fractures as a result of some minor or major trauma possibly in some other occupation

The case now under review came under observation in the earlier stage before fracture had occurred and before the patient had reason to associate his disability with any specific injury on duty An ethical as well as a diagnostic problem arose in consequence for the case was one unsuitable for a short certificate Service custom does not appear to admit of the question of liability and compensation being discussed with patients and without a knowledge of the pathology of his condition the patient is not in a position to advocate a claim when he leaves the Service It would seem that the matter of compensation in this case must be left to the chance that the medical officer who finally passes him out of the Service is more familiar with the writings of Kienbock, Muller, Mouat Wilkie and Harding than was the present writer prior to the occurrence of this case It is not improbable that the patient might have been better off from the point of view of compensation, had the disease been more advanced, and the expected fracture had occurred.

The patient, L. J. O., blacksmith, aged 31, was seen first on August 1st, 1938, when he stated that he had struck his right elbow on duty one month previously. Subsequently he had observed increasing weakness in the right hand, grip and wrist; he had difficulty in holding a pen, his hammer fell from his grasp and the muscles became easily fatigued. Examination revealed slight weakening of the grip, and of adduction of the fingers and wrist, but no wasting was present. There was tenderness over the ulnar nerve at the elbow and tingling over its distribution, with hypoesthesia over its distribution in the hand. These symptoms were regarded as due to contusion of the nerve and possibly some displacement from its groove at the elbow. He was seen in consultation by Mr Morris Axford, F.R.C.S., of Auckland, N.Z., who confirmed this diagnosis, but also observed slight swelling and tenderness over the right carpal semilunar bone. X-ray examination of the elbow showed no abnormality but revealed cystic degeneration and sclerosis of the semilunar bone. It was therefore explained to the patient that the disability from his injury to the elbow was transient but that he had a distinct condition at the wrist and that for this operation was required. It was considered that the disorganization of the semilunar was too advanced to admit of treatment by prolonged rest and he was accordingly discharged to hospital at Auckland, the bone being removed September 23. It was found to be little more than a hollow shell. He rejoined October 31 for light duty, and was treated with massage and faradism. On February 1, 1939, a manipulation under avipan was necessary in order to increase mobility at the wrist joint; but his recovery has been progressive and four months after operation he is able to carry out heavy work at the anvil with but slight loss of power and only occasional pain, while the range of painless movement is greater than before operation, and the risk of osteo-arthritic changes from this cause has been eliminated.

A note has been made in the Remarks column of his medical history sheet against the entry Kienböck's Disease, that it is "considered attributable to his occupation as a blacksmith."

REFERENCES

[1] Kienböck, R. *Forts. a. d. Geb. d. Röntgenstrahlen* 1910 16
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METAL FUME FEVER

By Surgeon Lieutenant-Commander I. W. A. Tosbery, R.N.

This condition also known under the synonyms "Zinc fume fever," "Brass founders' ague," "Spelters' shakes," and "Brass chills" is common amongst metal workers who, themselves tend to recognize the condition more readily than the attending Medical Officer.

Inhalation of the fumes given off by heated metals especially the heavier ones such as zinc, brass, lead, mercury, nickel, arsenic, cadmium, antimony, copper and even magnesium produce the fever. It is supposed that the finely divided metal particles destroy protein material, to produce a form of "protein shock."

No authentic case of fatal metal fume fever has been reported in the literature. Continued inhalation may produce a degree of tolerance, which soon passes off. Thus new workers are more immune and cases occur more often after the week-end holiday. It may, however, lead to the accumulation of sufficient toxic metal to produce systemic metal poisoning.

[redacted] and distinct [redacted] of chromic metal [redacted] alteration of the [redacted] dryness of the throat is [redacted] by headache tightness of the chest and a dry cough The [redacted] rises, with increase in the pulse rate A polymorphonuclear [redacted] then present (up to about 15,000) The symptoms pass off in [redacted] to twenty-four hours, leaving a slight headache

These cases are usually thought to be either early influenza or pneumonia

Treatment is symptomatic A hot bath at the onset often averts an attack

An efficient exhaust over the heated metal with a current of clean air passing from the worker to the metal should prevent cases occurring

Report on a Case

J O, aged 18 reported at 19 45 on May 27, 1938 He had been working in the blacksmith's shop helping to straighten a galvanized iron stanchion He complained of intense headache with a tight feeling in the chest He had a dry cough Temperature 103° F, pulse 112 No abnormality was discovered in the chest General examination was negative

He was given aspirin and mist pect The next morning his temperature was normal the oppression in the chest had gone, and he felt well except for a slight headache

Reference

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CIGNOLIN IN THE TREATMENT OF MYCOTIC DERMATITIS

By a Medical Officer

Royal Navy

Experience of the use of Cignolin (dioxyanthranol Bayer), in cases of mycotic dermatitis has impressed on the writer the great value of this preparation for resistant cases

This experience includes the most extensive and severe cases invalided from foreign stations to a home hospital after the prolonged use of other applications and methods as well as equally severe cases treated in two ships in hot climates

Cignolin has never been referred to in this Journal being omitted from a comprehensive review of treatment recently published and it has therefore been considered justifiable to bring it further to the notice of Naval medical officers who are so frequently required to treat mycotic dermatitis The merits of this treatment are its simplicity and effectiveness its disadvantages are its cost, and some slight danger unless certain simple precautions are taken

With regard to the manner in which it should be used the following prescription is advised —

R Cignolin		gr v
Paraffin molle	ad	℥i

This ointment is rubbed into an affected skin area one inch in diameter for ten minutes, and the patient is seen next day If there is no idiosyncrasy to the preparation, the only manifestation is a local erythema and faint brown pigmentation In such a case its use can be extended to all the affected areas each being rubbed for ten minutes by the clock The ointment should be applied with a piece of lint in order to protect the hand of the attendant This treatment is continued for five days and is followed by a period of three days during which no treatment other than dusting powder is used If the case is not yet cured a

further [illegible] be given, using [illegible] ing twice the [illegible]

The treatment [illegible] supplemented by the [illegible] which is of [illegible] is particularly [illegible] canteen and [illegible] In addition the patients [illegible] their socks daily [illegible] effected

Dusting powder in the socks is also made use of [illegible] applied, and no removal of dead skin is attempted, for unlike [illegible] for this purpose e.g. this has a high degree of penetration

If ichthyol is used for treating mycotic infections of the axilla [illegible] region the patient should be warned that it will stain the clothes, [illegible]

Provided there is no idiosyncrasy shown in the initial application [illegible] is manifested by erythema beyond the area of application [illegible] needed in mycotic cases where only limited areas of skin are involved [illegible] be used for more extensive conditions such as psoriasis to which [illegible] susceptible the same complications as may arise from the use of ichthyol must be guarded against

When patients do not report until staphylococcal infection has been established it is essential to treat this first For this purpose [illegible] practitioner advised for the treatment of chronic suppurating [illegible] has been found of value In passing it may be mentioned that this [illegible] also been found of great use as a temporary dressing in cases of [illegible] with persistent and much [illegible] and discharge —

R Calamina pulv
Lanolini [illegible]
Ichthamol

This ointment is applied on flat strips around the fingers and [illegible] and leaves clean granulating surfaces in the pustular areas after three days [illegible] ichthyol can then be applied as described above

Reference may here be made to another complication of mycotic infections of the feet, which has not to my knowledge been sufficiently stressed in the literature —I refer to those occasional cases of cellulitis over the lower third of the tibia which from time to time report to sick bays and are always associated with old football injuries of the leg A case has recently been seen of such recurrent cellulitis extending over many years, and attributed by the patient to a kick at organized football for which he had not received a hint certificate

While admitting that this injury was a factor it appeared desirable to remove the compensation complex from the case in mind, and therefore no local treatment was given He was, however, treated in bed, and severe "tinea pedis" was also attended to, the patient was suitably impressed when this previously intractable cellulitis resolved in two days and he was able to walk about without pain Only severe cases have been treated with ichthyol owing to its high cost all milder cases being cured with Whitfield's Ointment Castellani's paint spirit and sebacic dusting powder or one of the many preparations which passing fashion or experience may indicate

Of these severe cases two are given in illustration —

(1) An officer had developed mycotic dermatitis of both feet in the tropics on passage home one month prior to being seen by me on April 30, 1937 The infection then involved not only the interdigital folds, but the soles and dorsal surfaces up to the ankles with isolated patches on the legs The condition had been greatly aggravated by prolonged drills in preparation for the Coronation Pro cession and there were many fissures and much serous exudate but fortunately there was no sepsis He received five days treatment with ichthyol ointment [illegible] and on the fifth day was able to land for a prolonged route march

without discomfort He was subsequently treated with ointment powder only and on May 12 1937 was able to march for resettlement London with no worse effect than blistered heels On May 17 he had a relapse which was cured with a further course of ointment and a subsequent tropical cruise did not unmask any residual infection

This patient may be contrasted with the seventh mother officer who contracted the same disease who (experiencing a similar unfortunate delay) by a great variety of methods both orthodox and unorthodox in various hospitals in this country our specialist even including X ray therapy This case of prolonged service in a cold climate shows that infection was present for fourteen months and at various times all signs of the period were absent

(2) A stoker reported on August 10 1936 with extensive infection of both hands with much separation of the left middle nail The lesions were only superficial The patient sweated copiously his hands and feet being constantly wet and the condition and granulation as morocco leather from the beginning Treatment was treated for four days with ichthammol and zinc ointment and then for five days The patient who had all the time been under observation was charged to duty At this time the skin was of high grade and in places there was no trace of pus and all lesions were healed Recurrence

Reviews.

Bromley Hospital Reports A Collection of Papers Reprinted from the Hospital Vol VII 1938 10½ in pp Published by the Research Department of the Hospital post free.

Few branches of medicine have advanced as rapidly as that concerned with Diseases of the Chest This has been particularly marked during the last few years Every section of the medical profession has contributed to this progress the anatomist the anæsthetist have all co operated while the physician and surgeons concerned is well illustrated in the literature published by this book is a barometer of the experimental and practical work carried out in this country in the field of respiratory disease

It is natural that many of the articles deal with phthisis since this is the most common and detestable of all the diseases in the respiratory system but such diseases as bronchiectasis and new growths are not neglected and makes the book well balanced

The old explanation of infection as the primary cause of phthisis has never been completely satisfactory With the advent of modern methods of examination it must certainly be said that we have arrived at a new conception of the theory It is now believed and there is a mass of evidence to support this view that in a preceding atelectasis of a lobe or lobes with resultant negative pressure in the pleural space The aetiology and pathology of phthisis with in two articles by Doctors Lee Lumley and Maurice Davies has done considerable experimental work as well as clinical investigation and the broad results of their findings are found here Both articles are well illustrated by X ray films and diagrams The very interesting paper by Dr Lee on artificially induced atelectasis may be used to obtain selective collapse of lobes in pulmonary tuberculosis by the use of a bronchoscope and the injection of Lipiodol or paraffin oil The immediate results have been good but a wide experience of the method

bronchiectasis it is a matter of treatment which should be carefully considered and only allowed to come into general use when the late results of these early cases have been reviewed Bronchiectasis is not an uncommon complication of chronic pulmonary tuberculosis but to expose a patient deliberately to the added burden even though the original disease is controlled is a very doubtful procedure

In many cases in which artificial pneumothorax is attempted either no adhesion is possible or else it is unsatisfactory Thoracoscopy and the destruction of adhesions has proved of value, but many cases are unsuitable for this type of intervention and unless the operator is skilled, the final result may be only added complications With the perfection of extra pleural pneumothorax many patients who unless suitable cases for thoracoplasty, would have to be considered unfit for any form of surgical treatment can now obtain an excellent result of selective collapse following a comparatively minor operation Further more it is an operation against which no one could complain on aesthetic grounds and it can be performed on those who are not fit to undergo a prolonged operation

The value of thoracoscopy is very well dealt with by Mr B C Brook who gives results of one of the largest series of cases published He also discusses the value of extra pleural pneumothorax in another paper The technique of the operation and the immediate and early results of thirty three cases are dealt with by Mr J E H Roberts who discusses all the salient points In all these operations of this type were performed at the Brompton Hospital in 1937

In a fairly full article on carcinoma of the bronchus, Mr F C Ormerod considers the pathology and treatment of the disease The results were obtained from 100 consecutive cases where portions of the tumour could be removed through the bronchoscope for diagnostic purposes He is strongly in favour of simplifying the classification of these tumours and gives excellent reasons But what will be of most interest to the profession in general are the results of treatment Malignant tumours of the bronchus are rapidly fatal and the last days of the patients are made most distressing by their illness Here there are reviewed the results of the implantation of radon seeds into the tumour mass or, in a few cases, the placing of a radon container in the affected bronchus The author is not too optimistic, but he states that The results of treatment of these cases are not too discouraging when the type and accessibility of the growth are considered The average life of the treated cases is just over twice that of the untreated cases and the general condition of these treated cases has been very much relieved, with few or no symptoms remaining The prognosis in carcinoma of the bronchus has been so uniformly bad and treatment so difficult as to be usually impossible by ordinary means that even this temporary alleviation may be considered a considerable advance

The term galloping consumption is familiar to all but 'creeping tuberculosis' since it is less dramatic is not well recognized either by name, or clinically. In his usual inimitable style Dr L S T Burrell gives a short account of this form of phthisis in which the patient feels well, and is generally symptomless, in spite of serial roentgenograms showing a slow extension of the disease ending in a sudden flare up and a rapid exit This reprint of Dr Burrell's is followed by two other articles by him, dealing with abscess of the lung and the classification of the pneumonias He regards pneumonitis as a mild type of pneumonia, and suggests acute pneumonia bronchogenic pneumonia, secondary and subacute or chronic pneumonia, as a new classification

The death of Dr L S T Burrell has deprived the medical profession of one of its great men a man of tremendous character, and a clever physician who has helped to initiate many of the more valuable advances made in the diagnosis and treatment of chest disease

The annual report of the work [redacted] in 1937 makes very interesting reading [redacted] over 1,000 [redacted] one of suffering from pulmonary tubercu[redacted] in patients [redacted] and other diseases as complications Due to the [redacted] of surgical help there is only a small increase in the work done in that section Despite of the fact the number of cases of pneumonectomy, for example has been only doubled This number of operations for thoracoplasty has been considerably reduced due to the increasing number of cases of extra pleural pneumothorax All the other departments of the hospital show a considerable increase in the amount of work done

The whole report has an optimistic outlook which is very encouraging Treatment of respiratory diseases has always been difficult and the results relatively poor but we can now look forward to a new era when much of the suffering brought about by them will be eliminated We strongly recommend this book, as well as its predecessors, to all Naval Medical Officers who aspire to the honourable distinction of Medical or Surgical "Specialist"

W D C

RESEARCHES PUBLISHED FROM THE WARDS AND LABORATORIES OF THE LONDON HOSPITAL DURING 1938 London H K Lewis and Co Ltd Price 7s 6d net

Thirty seven reprints of articles published in thirteen different scientific journals are included in the volume of these researches for 1938 As is usually the case, over half the papers included are concerned with pathological research and most of them have previously appeared in the *Journal of Pathology and Bacteriology* and in the *British Journal of Experimental Pathology* Critically to review these advanced scientific papers would be an impossible task for one writer on account of the very wide field covered and the limited appeal of many of the subjects discussed For example those interested in the paper entitled The Ultra Violet Absorption and Potentiometric Titration Curves of Human Serum Proteins and Some Other ' would probably be little unmoved by the description of ' A Plethysmographic Method of Measuring Systolic Blood pressure in the Intact Rat

Professor S B Bodson again presents a study on the subject of immunity in pestaenosis, a disease to which considerable attention has recently been attracted in view of cases occurring in persons handling Eastern patrols and of the knowledge being gradually acquired that the disease is far more widely spread in the animal kingdom than was generally considered to be the case

Dr Richard Bomford contributes an important and closely reasoned paper reprinted from the *Quarterly Journal of Medicine*, on the subject of Anaemia in Myxoedema and the Role of the Thyroid Gland in Erythropoiesis He concludes that the three types of anaemia found in association with myxoedema namely the single hyperchromic type, the hyperchromic type and the Addisonian hyperchromic type are due to alimentary deficiencies of iron and liver factor respectively and differ from the corresponding deficiency anaemias only in being modified by the co existence of myxoedema As a result of his experimental observations on the physiology and pathology of the erythron he suggests that the normal size of the erythron depends not only on the rate of consumption of oxygen by the tissues but also upon the tension of oxygen in the atmosphere as well and he concludes that there is no evidence that the presence of thyroxine in the bone marrow is necessary for the normal maturation of red cells

Headache is the subject of two papers Dr D W C Northfield presents a study of headaches induced by intracranial tumours, with especial reference to their causative mechanism He expresses the opinion that this type of headache is produced by abnormal tension to the walls of the cerebral blood vessels and that the dura mater is not the sensitive structure responsible for the characteristic

pain. The [illegible] H. Wilson deals with headache of psychogenic origin.

[illegible] the title of the Lumleian Lectures for 1938 delivered by Dr. [illegible] reprinted in this collection of papers from the *Lancet*. In these [illegible] Sidcup first describes the clinical features of rectal pain which he [illegible] spontaneous pain and painful over-reaction to [illegible] stimulation [illegible] from lesions confined to the substance of the [illegible] intestinal [illegible] system [illegible] hyperæsthesia of a disagreeable kind, and the [illegible] part of his thesis [illegible] the pathogenesis of this type of pain. The lecture [illegible] a model of the [illegible] fusion of academic knowledge with practical clinical wisdom. [illegible] into them a sound knowledge of the anatomy [illegible] actual nervous [illegible] of the modern neurological nomenclature are [illegible].

[illegible] has perhaps been [illegible] to indicate in general the tone as it were of [illegible] publication. Most of the papers, albeit of high scientific achievement, are [illegible] may be permitted to [illegible] caviare to the general. It is remarkable [illegible] that the laboratory, physiological, pathological biochemical and what [illegible] may well represent [illegible] with the medical wards coming a good second, the [illegible] part of the hospital has been extremely modest. In clinical surgery only [illegible] article is included [illegible] on the surgical treatment of Bell's palsy by [illegible] W. M. Morris. Perhaps not without reason, the surgeons wish to amplify [illegible] motto of their great hospital: Humani nihil a me alienum puto [illegible] [illegible] [illegible] verbo.

F. G. H.

[illegible] SURGERY. By the Surgical Staff of the Royal Northern Hospital, London. Edited by Sir Launcelot Barrington-Ward. First Edition. 1939. 8½ × 5½ + 552 with 163 illustrations. Super Royal 8vo. London: H. K. Lewis and Co., Ltd. Price £2 2s. net in Great Britain.

This book is the combined work of several brains all of whom are on the staff of the Royal Northern Group of Hospitals. Each contributor has been responsible for a subject but all the contributions have been subjected to collective criticism so as to produce a pronounced and balanced account of the surgical practice of the [illegible]. In brief the volume is the product of a surgical team. Special subjects are omitted nor are classical procedures and those that have passed out of [illegible] use described. By so doing the size of the book is of reasonable [illegible] and more practical. As far as possible, one well tried way of performing [illegible] operation is presented so as to guide, rather than confuse the reader [illegible] unless actually one for the practising surgeon who assuredly will find help [illegible] in this book. The descriptions of the various operations and procedures are [illegible] lucid in all sections, being clear, concise and full of practical detail. [illegible] simple and straightforward methods tested by personal experience and [illegible] in the laboratory are selected, added to, modified and published by routine [illegible] practice. The sincerity and high standard throughout disarm criticism. The book is beautifully produced and the illustrations most of which have been [illegible] especially and taken in the theatre at the time of operation, are superb. Anyone desiring, to put it mildly, to write a work of such uniform merit, the chapter on the Rectum and Anal Canal stands out as being particularly praiseworthy. The [illegible] of the more simple procedures such as haemorrhoidectomy, fissure [illegible] and rectal abscess so helpfully illustrated are not overshadowed by [illegible] to major operations of perineo-abdominal and perineal excision of the [illegible].

[illegible] recommendations a reference to subdural hæmatoma and an expansion of the [illegible] amputations would be useful. An excellent and helpful work which [illegible] house surgeon will value.

H. F. B.

[illegible]ay (Andrew)—Cate[illegible] Series [illegible] F C P [illegible] F C S E I R S E Part IV Tenth Edition [illegible] Price 1s 6d Postage 0½

It is a well known member of the C[illegible] charged It has easily readable print and [illegible] almost tale t outside the catechism classific[illegible] gression from it that a larger work could not supply [illegible] ion essential to a student who has to revise a long course [illegible] E M G C

Midwifery—Catechism Series Fourth [illegible] Fp 136 Edinburgh E and S Livingstone Pr[illegible] Postage 2d

The latest edition of these useful [illegible] and rewritten They still however retain the concentrated [illegible] ul to the student for rapid and thorough revision just before the [illegible] ination

The first part deals with the anatomy and physiology of pregnancy and the course of normal labour There is a useful section on antenatal care and treatment in which the important details are well [illegible] p The complications and abnormalities of labour are dealt with in the third part together with such pathological conditions as may arise A discussion on the use of instrumental labour could be imploded with advantage in the section dealing with the contracted pelvis At the end there is a short chapter on the more usual obstetrical operations, and a useful index A P H

The Dysenteric Disorders The Diagnosis and Treatment of Dysentery Sigmoiditis and other Diarrhœas in General Practice By Philip Manson Bahr C M G D S O M D D T M & H Cantab F R C P Lond Demy 8vo, 630 pp 33 plates 9 in colour and 120 text illustrations London Cassell and Co Ltd Price 25s net

Those who for the past few years have known that this work from the pen of Dr Manson Bahr was in preparation have eagerly awaited its publication and their patience has been definitely rewarded by its appearance They were probably expecting a treatise dealing more or less exclusively with those diseases in which the usually accepted dysenteric syndrome i e diarrhœa with the presence of blood and mucus in the dejecta is the outstanding feature and because of the author's world wide reputation in tropical medicine a work devoted primarily to this symptom complex as found in diseases mostly peculiar to the tropical and sub tropical zones But in actual fact Dr Manson Bahr's book is much more comprehensive for the writer takes as his subject not only those diseases of warm climates usually enumerated under the general designation of dysentery but many which are not commonly confined to these regions and which are not as a rule classified under the heading of the dysenteries Such for example are idiopathic stenotic[illegible] melæna diseases mucous colitis and intestinal polyposis

Before considering the dysenteries of bacillary origin the author devotes five chapters to the procedure of investigating cases of acute and chronic diarrhœa, the technique of sigmoidoscopy, a historical survey of the dysenteries in general, their geographical distribution and classification He gives a very full and authoritative description of the group of bacillary dysenteries in both acute and chronic stages The occurrence of cases of acute dysentery on board ships sailing on popular pleasure cruises receives due attention The author is of opinion that the illness is usually contracted on shore becoming manifest on board two or three days after putting to sea But although this may be true in many instances it must not be assumed that such is invariably the case

Constant [illegible] ed to p[illegible] on [illegible] cooking p[illegible] tion of [illegible] fruits and other foods to those [illegible] of one suspicion Seven cases have [illegible] and it is almost incredible to these [illegible] diagnosed and treated with emetine, as cases [illegible] prehensive account is given of the whol[illegible] [illegible] iology and geographical distribution as well as the [illegible] significance of cyst excretors are fully discussed In [illegible] as the first recognized water borne epidemic of am[illegible] the great Chicago outbreak of 1933 might perhaps have been describ[illegible] [illegible] tail

[illegible] ical and surgical treatment receives adequate attention and on this [illegible] Manson Bahr speaks "not as the Scribes" He is convinced that in [illegible] amœbic dysentery the combined treatment with rectal Yatren [illegible] by mouth is the most efficacious yet devised but he does not omit [illegible] round dozen different preparations for which success has been [illegible] ally claimed Among the unusual amœbic lesions so rare as to be [illegible] ological curiosities, described in this section of the book are amœbic [illegible] of the lung, spleen, and epididymis and cutaneous ulceration, due to [illegible] sion of the skin Balantidiasis and giardiasis are both pet subjects [illegible] tropical medicine In this book their relative importance is weighed [illegible] All the author's cases of giardiasis were subjected to the duodenal [illegible] scopy but as no characteristic lesions were discovered in any case [illegible] on that there is no further need for this procedure when diagnosis has [illegible] le by microscopical examination

[illegible] ing very new appears in the chapter dealing with cholera and some of [illegible] perhaps have been omitted from a work of this advanced nature For [illegible] the Hamburg epidemic and the classical incident of the Broad Street pu[illegible] come into the category of those things which every medical student ought to know

Sprue is exceptionally well dealt with, and it is particularly refreshing to have Dr Manson Bahr's own view as to the ætiology of the disease definitely formulated It has been well said that "the theories concerning its origin are almost as numerous as the mathematical possibilities will allow" and Dr Hamilton Fairley's conception of a metabolic breakdown of the gastro intestinal tract seems almost as indefinite as the other hypotheses of its causation The author gives his reasons for his opinion that sprue is due to some as yet unknown specific infection

At the end of the volume a small paragraph on foreign bodies in the rectum will delight those who have been privileged to sit at the feet of the author at the [illegible] London Hospital for Tropical Diseases A radiograph of the world famous [illegible] ler is the final plate in the book but where is that statue of Napoleon?

[illegible] ne plates in colour and the large number of reproductions of radiographs are excellent Many of them will be familiar to readers of "Manson's Tropical Diseases" An Appendix, compiled and beautifully illustrated by the author, deals with the zoological aspects of the pathogenic intestinal protozoa. The laboratory technique involved in the investigation of the conditions described in the text is contained in a second Appendix by Mr W J Muggleton who has been for many years the author's laboratory technician An exceptionally complete bibliography is a welcome feature of the book Dr Manson Bahr must be congratulated on the excellence of his book which is the product not only of years of practical experience and research, but of the painstaking collection and correlation of the results of workers in the subject all over the world

F G H

[illegible] By Sir D'Arcy Power, K.B.E., [illegible] Catalogue Supplement to A[illegible] Keeper of the Records of St. [illegible] Hospital. Honorary Librarian Royal College of S[illegible] First Edition. [illegible] pp. 6 + xvi. Plates 48. [illegible] Medical Press and Circular, Gresham Street, Covent Garden. [illegible]

This very interesting [illegible] has been designed [illegible] The printing is good and the [illegible] pleasant to handle.

Each Society's history and activities are clearly [illegible] undue rhetoric, or with [illegible] theories or systems. [illegible] a tribute to the work of the [illegible] in the Science of Medicine [illegible] Sciences. An excellent [illegible] Editor stands [illegible] development of the Societies. Although the entries [illegible] the book is by no means dull, [illegible] it notably in the Histories of the Hunterian Society and [illegible] Royal Society.

Medicine has always been the [illegible] and has frequently involved civil [illegible] Members of the Society will reward perusal accordingly.

To many readers the keen mention of eminent [illegible] personalities which hold its staff. Sir William Gairdner's [illegible] learned notes dictated to a patient Horse Doctor [illegible] by the Thames whose owner wrote delightful [illegible] Parish Magazine. Lockwood, a man whose legal cast of feature and [illegible] Digges, clubbing his colleagues and alternately [illegible] and cramming [illegible] Residents. Hector Cameron, a [illegible] whose surgical opinion [illegible] enlivened by quotations from Horace and Virgil.

The plates are well produced and interesting and the Index is adequate.

W. W. K.

Rheumatism. By H. Warloe Grove, D.M.Oxon., B.Ch., M.R.C.S., L.R.C.P. (Senior Physician to the Charterhouse Rheumatism Clinic). First Edition. 1939. Pp. 280. 31 Illustrations. London: John Bale Medical Publications, Ltd. Price 12s. 6d.

The chronic rheumatic diseases with which this book is chiefly concerned are not spectacular: their immediate effects are not dangerous to life, and their response to treatment is rarely rapid or dramatic. But their incidence is widespread, and their progress, if not vigorously attended, relentless. Their contribution to the ill-health of the population of this country is enormous, and their careful consideration is incumbent on every practitioner of medicine.

The volume under review presents an excellent survey of this field, together with numerous original and stimulating suggestions from the author's own observation and research. These have been conducted largely at the Charterhouse Rheumatic Clinic, where some 5,000 cases of all types are treated every week, and where a vast body of experience has been accumulated.

The classification of rheumatic diseases here given is comprehensive and clear, and the review of the aetiology exhaustive. The author inclines to the now generally accepted view of an infective process in the majority of cases in which factors such as heredity, climate, housing conditions, trauma, general metabolism, and other conditions play a secondary part. The necessity of the various organisms which may be concerned is very full, although little is said of modern views of the possibility of virus infection.

The question of therapy is dealt with in a comprehensive and varied fashion. The importance of treating the patient rather than the disease is duly stressed. The paramount value of rest in bed, which in many arthritic cases is as essential as in pulmonary tuberculosis, is not overlooked.

[illegible] [illegible] of careful search for foci of sepsis is rightly emphasised But the author [illegible] strongly the increasing tendency to immediate extirpation of such [illegible] and pointing out the grave risks of exacerbation and possibly permanent aggravation of the patient's condition

His own routine treatment, which has yielded excellent results in his clinic and the efficacy of which has been attested by numerous other workers, is very fully described

Its essence is the weekly administration of a mixed stock vaccine containing both streptococci and certain staphylococcal strains and given in minute doses The question of reaction receives considerable attention, and the indications derived therefrom for modification of treatment are carefully and clearly set forth

Vaccine treatment is the author's favourite therapeutic measure and he recommends preliminary trial of such treatment in the vast majority of cases

But many other therapeutic measures are dealt with chief amongst them the use of various gold salts which is rapidly growing in favour Here again he advocates the use of exceedingly minute doses which in his experience, both yield better results and are freer from risk than the strengths commonly employed And he rightly stresses the importance of regular urine examination, and if possible, blood-counts during the courses of injections

The book contains special articles on manipulation X ray therapy and orthopædics, contributed by experts in these specialities The illustrations include a number of excellent reproductions of X ray photographs It is attractively bound and well printed, and it offers to all those who are engaged in the treatment of these difficult and complicated diseases not only sound advice but much encouragement and good hope R W N

SANITARY LAW IN QUESTION AND ANSWER By Charles Porter, M D B Sc, M R C P Ed, of the Middle Temple Barrister at Law, Medical Officer of Health, Metropolitan Borough of St Marylebone Lecturer in Public Health, Middlesex Hospital Medical School, Lecturer in Public Health Administration and Practice, London School of Hygiene and Tropical Medicine Author (jointly) of Robertson and Porter's "Sanitary Law and Practice" "Elements of Hygiene and Public Health," "School Hygiene and the Laws of Health" &c, and James Fenton, C B E, M D M R C P D P H, Medical Officer of Health Royal Borough of Kensington, Lecturer in Public Health Administration and Practice London School of Hygiene and Tropical Medicine Lecturer in Public Health Royal Sanitary Institute and National Health Society Fourth Edition 1939 Pp xv + 362 London H K Lewis and Co, Ltd Price 10s net

This book still retains the Question and Answer form of its predecessors but so much consolidation of sanitary law has taken place since the publication of the third edition in 1932 that it has been necessary to rewrite, recast and slightly enlarge its contents

Divided into five main parts with numerous subdivisions it deals in turn with (1) Sanitary Administration (2) Factories (3) Housing and Town Planning (4) Miscellaneous Subjects, (5) Food and Drugs Poisons &c

923 questions are asked (and answered) and the Public Health student who can assimilate these answers should be able to face any examination on sanitary law with complete confidence For those who no longer have to pass examinations judicious use of the index and the occasional cross reference in the text should make the book a useful and up-to-date compendium of public health law

Part IV alone deals with eighteen subjects including the Midwives Acts, vaccination, school medical inspection, mental defiency and blind persons, diseases of animals acts, streets and buildings—the last named however, might

be rectified in Part III—this grouping all fractures and dislocations together. The book is still of handy size and is admirably free from misprints.

Presentation of the question in a brilliant style of type from the answer is a possible refinement. This would introduce a little variety into pages which from the nature of the subject, are necessarily hard reading. A. E. M.

FRACTURES AND DISLOCATIONS IN GENERAL PRACTICE. By John Horsford, M.S. Lond., F.R.C.S. Eng. Assistant Surgeon to St. Bartholomew's Hospital. Late Hunterian Professor, Royal College of Surgeons. First Edition. 1939. Pp. 274, with 71 illustrations. London: H. K. Lewis and Co., Ltd. Price 12s. 6d.

This book, which is the latest addition to the General Practice Series, has been written in response to the request of a number of students and recently qualified men. It is not intended to be a complete textbook, but to provide more detail and practical help than are found in the ordinary works on general surgery. No details of open methods of operation or complicated methods of skeletal traction are included. The descriptions are limited to such as have proved satisfactory and simple and many follow those used by Bohler of Vienna. The lay out of the book is on orthodox lines, the first eleven chapters being devoted to general principles in regard to continuous traction, delayed and non-union, plaster work, complications of fractures, &c., each of which is a good *précis* of essentials. Then follow thirty chapters each dealing with fractures and dislocations regionally. The descriptions as far as possible are limited to one method only for the sake of simplicity. On page 136 figure 55 illustrates the reduction of a left Colles fracture, whereas the description in the text is that for the reduction of a right-sided fracture. This seems to be unnecessarily confusing. The book is written in a clear lucid manner, easy to read and understand; beautifully printed and suitably illustrated largely with untouched reproductions of skiagrams. It should be of value as a quick reference in fracture cases and to the student prior to his examination in surgery. H. F. B.

ESSENTIALS OF FEVERS. By Gerald L. Breen, M.D., D.P.H., Ch.B. (N.U.I. Dub.), D.O.M.S. (R.C.P. Lond., R.C.S. Eng.), Senior Assistant Medical Officer, The Brook Hospital, London; late Senior Assistant Medical Officer, The North Eastern Hospital, The South Eastern Hospital and the Northern Hospital (L.C.C. Infectious Hospitals Service). Examiner in Fevers to the General Nursing Council of England and Wales. First Edition. 1939. Pp. xii + 274. 1 plate, 14 illustrations, 8 temperature charts. Edinburgh: E. and S. Livingstone. Price 7s. 6d. net—postage 9d.

The author of this book has succeeded in the object which was to present to the student and newly qualified practitioner a concise account of the commoner infectious diseases. In addition to this he has given an excellent summary of the modern teaching of many bacteriological problems such as The Nature of Infection, The Nature of Bacterial Antigen and Antibody, and the routes and methods of Transmission of Infection.

The Chapter on The Spread and Control of Infection contains much practical advice which cannot fail to be of value, and in particular the description of the technique of Bed Isolation Nursing will help medical officers in treating cases of infectious disease when their staff may not be fully clever trained.

The descriptions of the various diseases are concise and practical. Many of Dr. Breen's remarks are pithy and to the point, such as that in which he pleads for the diagnosis of diphtheria on clinical grounds rather than waiting for bacteriological confirmation. He says: It is far easier to tell the parents of a

healthy child that you sent him to hospital [illegible] than to explain to the parents of [illegible] that you had to wait for further [illegible] confirmation

This book is remarkably complete It is well got up and free from printing errors A second edition will no doubt be demanded at an early date

M C

A Dictionary of Malay Medicine By John D Gimlette M R C S, L R C P Edited and completed by H W Thomson M C S (Ret) with a foreword by Sir Malcolm Watson M D LL D 1939 Pp xvi + 259 Oxford University Press Price 7s 6d net

This is more than a dictionary in the ordinary sense of the word and though Dr Gimlette did not live to complete his work his friend Mr Thomson has done this for him In addition to the equivalent words in English there are full and interesting descriptions of herbs and their uses, Malayan methods of cure practised by their bomors or medicine men, the uses of poisons, their antidotes peculiar beliefs and a great deal of other interesting material concerning every branch of Malayan medicine

There is much to be learnt in this work in connection with the various incantations used by the Malayan medicine man during his treatment of various pathological processes and one may read too, of the close alliance of Magic and medicine in present day Malaya reminding one of the similar alliance which existed in Europe in the Middle Ages The average Malay firmly believes in ghosts and devils and many of these are supposed to be associated with disease Against these dangers special precautions are taken which include the utterances of incantations fumigation and the administration of special medicines

This is certainly a most interesting work and one which could only have been produced by a man such as J D Gimlette who knew and loved his Malays. Medical men visiting or serving in Malaya will find this 'dictionary' a mine of interesting information It contains two plates and an English Malay index to facilitate reference

J M R

Diet and Ill Health in the Forest Country of the Gold Coast By F M Purcell M D, M R C P First Edition 1939 Pp viii + 78 [illegible] illustrations London H K Lewis and Co Ltd Price 7s 6d net

This little book is full of very interesting information The author, who is highly qualified medically is a Medical Officer in the West African Branch of the Colonial Medical Service, and has had considerable experience of medical practice in that part of the world

The book is divided into two sections The first consists mainly of diet tables constructed from information derived from Government schools, hospitals and nursing mothers With regard to the latter the interesting conclusion is drawn that the breast milk is often of such poor quality owing to the mothers diet consisting mainly of plantain, cocoyam maize corn, cassava yam and rice, &c. that babies thrive much better on tinned milk and orange juice This state of affairs is the very opposite of that which exists in Europe and most parts of the world

The second section gives an insight into the clinical atmosphere of the Gold Coast with its vast medley of syndromes pellagroid and otherwise the majority of which are traceable to the defective and ill balanced diet as administered to children

This book can be recommended to young medical officers whose sphere of work lies in West Africa

R L G P

A [illegible] Frank Coke [illegible] with the Collaboration of [illegible] Pp 66 pages 1 plate 19 figures Bristol John Wright & Sons Ltd London Simpkin and Marshall Ltd Price 10s net

This is a most readable treatise on asthma and the allied [illegible] The opening chapters contain a full and extremely lucid description of [illegible] and prophylaxis We are rather afraid of the strange end, as yet unexplained, that prophylaxis never occurs in the anæsthetised animal It is stated that scarlet death from anaphylactic shock after injection of anti diphtheritic [illegible] is expected in one case in 70 000 Evidence is produced to show that sensitivity can be transmitted by blood transfusion this is a very important matter for those of us who are interested in choosing donors for peace time requirements The author also points out that in hypersensitive subjects [illegible] tests are not without risk

Asthma is classified into three types Type I is purely allergic or [illegible] hypersensitive, Type II is infective or bacterial Type III is mixed allergic infective and also includes the dangerous aspirin sensitive cases In distinguishing between these three types the differential sedimentation test would appear to be of use Prophylaxis and treatment are fully discussed The whole book is well edited, the type is clear, it is compact, and throughout the references are [illegible]

J G H

Cancer Causation Prevention and Treatment By A E Blackburn M D formerly Vice President Section of Medicine Royal Society of Medicine 1939 Pp 111, with 14 illustrations London H K Lewis and Co, Ltd Price 6s

We started this book, rather wondering how the author proposed to deal with such a huge subject in such a small space Having read it, we realized that the book is purely a monograph giving his views on the causation of malignant disease

Dr Blackburn is a man with a mission and the object of that mission is to convince his readers that the consumption of animal fat in excess is the chief (if not the only cause) of gastro-intestinal cancer that the presence of smegma is the cause of cancer of the penis in uncircumcised males, and in short that an excess of cholesterol is at the root of all cancers He even goes so far as to say that "Cancer of the cervix and uterus are less common in Jew and Moslem women because the men are circumcised and the fatty irritant is not present

The book contains an enormous number of statistics in support of the author's theory Many of these statistics are comparisons of the incidence of malignancy between white and coloured races but it is doubtful how far the figures would bear analysis

Although the title of the book includes the word 'treatment' that aspect of the subject is dismissed in a few short lines, such as 'Operation with prophylactic irradiation is the usual treatment (of cancer of the uterus) and post operative care is essential'

The penultimate chapter is devoted to the consideration of foodstuffs, and to the author's conception of a perfect diet It includes a sample menu from R M S *Queen Mary*, which he considers a good example of a well balanced meal, and we are pleased to note that he regards beer as 'an excellent beverage'

It is difficult to know how to classify this monograph It can have no place in the general practitioner's library it is unlikely to appeal to the specialist, and although the research worker might read it as a matter of interest, it is extremely doubtful as to how far he would agree with the author's theories

Possibly it is intended for the lay public but if that is the case it is most certainly one of the type of book that we would recommend our non medical friends to leave on the Naval Medical Officer's bookshelf

W A H

Surgical Sutures and Ligatures By F J Holder, B Pharm, Ph C First Edition 1939 Pp 64 Illustrations Edinburgh E and S Livingstone Price 1s 6d, postage 2d

The aim of this book is to provide for surgeons, hospital pharmacists and nurses and students a general summary of the data relating to surgical sutures and ligatures The preparation of these various materials from their raw state to the final issue in sterilized condition is briefly, but clearly outlined The merits of choice for sterilizing catgut and kangaroo tendon are by the iodine method or still better by the so called "dry heat" process By the Therapeutic Substances Act Regulations these substances can only be manufactured for sale under a licence granted by the Ministry of Health One per cent of material from each batch must be subjected to a standard bacteriological test, and only after obtaining negative results by such a test may a batch be released for sale When it is necessary for economy exists genuinely sterile interior catgut is sale provided the recommendations of the manufacturer as to the final surface sterilization are closely followed

A readable and informative monograph which will be useful to those for whom it is intended

H F B

Æquanimitas with Other Addresses By Sir William Osler Third Edition, with portrait London H K Lewis and Co, Ltd Price 7s 6d

How Æquanimitas has grown since our student days! It comes in the present edition proudly leading no fewer than twenty one other addresses of its famous author in a volume of 450 pages All these essays have a particular appeal for medical men since they were written by one of the most famous of our profession as addresses to medical students nurses, and learned gatherings, on our State occasion

Sir Walter Langdon Brown writes an engaging preface to this edition, and it is worth while here to follow his example and say a few words about the author

William Osler was born in Canada of Cornish parents At the age of 25 he found himself Professor of Medicine at McGill University Montreal, and a Professor he remained for the rest of his life Then after some time in Philadelphia he was invited to the Johns Hopkins Hospital in Baltimore Here his work gained world wide recognition and led to his being offered the Chair of Regius Professor of Medicine in Oxford University This minutely for British medicine he accepted Osler's claim to fame lay in his intense and conscientious devotion to his chosen profession combined with great general learning a magnificent physique and personality His greatest monument was his textbook on Medicine—perhaps the last of the one man textbooks Osler was one of those fortunate who could command both respect and love and we must be thankful to the publishers for having presented a portrait of him as a frontispiece to this edition it shows well what manner of man Osler was

But to return to the book The famous essay on Æquanimitas is one in which he addresses medical men to cultivate the quality of equanimity as one of the cardinal virtues of our profession This is true to day than in those pre war days for which it was written and others as well as doctors might well be advised to cultivate calmness and stability in these days of chronic crisis Nor are any of the essays that follow in any way dated though they were written over a quarter of a century ago Yet are they? Truly their matter is undated for wisdom is

ageless [illegible] coal [illegible] on the same things [illegible] Osler's ghost [illegible] equilibrium."

It would not be [illegible] selections of the 21 essays for special mention—all [illegible] are all good, but here are some of the titles:—Teaching and Thinking, After Twenty-five Years—Books and Men—Unity, Peace and Concord—in another—"The Fixed Period"—Osler took his theme from a novel by Anthony Trollope of that name—and quite in character with the world wide controversy as the sponsor of the "too old at forty" theory. If you imagine Osler took him wrongly much to his annoyance but he always stuck to his contention that a man's best work was done between the ages of 30 and 40. He was reforming of course to original work and did not intend to be unlike the words of accumulated experience acquired in later life.

The volume ends with Osler's list of text-books for medical students. We may note in connection with all of his selections for these days when literature and the classics are apt to be thought little of. In our opinion many of his best could be labelled "provide Classical reading for the dilettante."—Lipoma, etc. with Other Addresses. By William Osler. W. H. I.

CATALOGUE OF LEWIS'S MEDICAL AND SCIENTIFIC LIBRARY. New Edition, revised to the end of 1937. Part II. Classified index of subjects with names of authors who have written upon them. Pp. 136. Demy 8vo. London: H. K. Lewis and Co., Ltd., 136 Gower Street, W.C.1. Price 10s. net (to subscribers, 8s.)

This is the companion volume to Part I which dealt with Authors and Titles and which was reviewed in the January number of this Journal. As in the last edition, the initials of authors have been added to facilitate reference to the body of the Catalogue. The yearly publication of each book is also given and in a much larger number of cases than formerly a word or two has been added to indicate the nature and scope of the book. A useful and well compiled volume.

H. I. B.

AIDS TO DERMATOLOGY AND VENEREAL DISEASE. By R. M. B. Mackenna, M.A., M.D., B.Ch. Camb., M.R.C.P. Lond., Hon. Dermatologist, Royal Liverpool United Hospital (Royal Southern Hospital). Second Edition. 1938. Pp. viii + 264. 7 figs. London: Baillière, Tindall and Cox, 7 and 8, Henrietta Street, Covent Garden, W.C.2. Price 4s. 6d.

This is a worthy addition to the well known Aids series. It is offered as a help to the student in a restricted field of medicine. It may seem strange to find skins and venereal diseases still in a lonely headlock: no doubt it is for the sake of convenience and economy. The whole reading matter is clear and concise and should be especially suitable for examination purposes. It would be idle to pretend that one could derive anything about dermatology except from seeing cases. One wonders what Hebra's dry-as-dust benzoate treatment of scabies will appear in a British textbook.

T. G. H.

HANDBOOK OF BACTERIOLOGY. By Joseph W. Bigger, M.D., Sc.D. Dublin, F.R.C.P.I., M.R.C.P. Lond., D.P.H., M.R.I.A. Dublin. 1939. Pp. xvi + 510. Figs. 100 and 3 coloured plates. London: Baillière, Tindall and Cox. Price 12s. 6d.

The excellent little book which has now reached its fifth edition is well up to date in all departments of bacteriology. The essential factors in connection with Lancefield's and Griffith's classification of streptococci and the uses of the sulphanilamides as against bacterial diseases have been dealt with in an adequate manner. Many chapters have been almost entirely re-written including those on rheumatic, food poisoning, and dysentery bacilli and tubercle bacilli.

[illegible] this well known [illegible] book [illegible] It was translated into Spanish in September, 1936

The [illegible] passes the others in lucidity and the recent advances in [illegible] incorporated into almost every chapter New illustrations [illegible]

It is [illegible] recommended for the use of students of bacteriology and for [illegible] who have not specialized in this subject R S P

[illegible] Regional Anatomy By D B Jamieson M D Senior [illegible] Lecturer Anatomy Department, University of Edinburgh [illegible] Upper Limb and Section VII Lower Limb Second Edition [illegible] Section VI contains 42 plates and Section VII 52 plates Edinburgh [illegible] Livingstone 16 and 17, Teviot Place Price, Section VI (Upper [illegible] net postage 5d Section VII (Lower Limb), 10s net, [illegible]

[illegible] sections are a continuation of the second edition of a work [illegible] book the first part of which was published in 1937 and reviewed in [illegible] Journal The outstanding feature of the whole edition is the increased [illegible] of colours used in the plates some of them having as many as five [illegible] This is a great advantage, especially where several small structures of [illegible] kinds are crowded together The plates are arranged as far as possible [illegible] accordance with the progressive steps of dissection and all the parts belong to the left side Some of the most valuable plates are those describing regions adjacent to the trunk of the body, both trunk and limb structures being shown, and in many cases the underlying skeletal foundations are dotted in The nomenclature is that approved by the Anatomical Society Where this differs from the Basle Nomina Anatomica the latter is added in brackets

Nothing could be clearer than the display of structures in these plates both from the surgical and the regional aspects and the insertion of muscles as displayed in the osteological plates, could not be surpassed Nerves and arteries are extremely well defined in the coloured plates and the dissections of the palms of the hand and the soles of the foot with their synovial sheaths, and fascial tendons, intrinsic muscles, and the bones retained to dotted outline beneath these intricate structures are not only masterpieces from the point of view of instruction but also works of art The labour must have been immense but it appears to have been a labour of love

Dr Jamieson has designed the sections primarily for students but they must be invaluable as plates of reference for the practising surgeon or the neurologist It is little wonder that the demand for a second edition of this work has been so insistent and world wide The price of each section is so relatively small as to come within the reach of the most modest pocket this is an added reason for recommending the Atlas to Naval Officers as an essential part of their portable library T G D

La 6e Session de l'Office Internationale de Documentation de Medicine Militaire et de Pharmacie Militaires Secretary—Col Médecin Voncken of Liége

The Records of the Sixth Session of the Congress have been received in this Office, with a request for a notice on our pages

The sixth session was held at Geneva from October 12 to 14 1938, and twenty nine nations were represented in the Hall of the University there The opening addresses were given by Colonel Voncken of Liége the Director and by the President who was the representative of Roumania

Several interesting papers were read at the Conference including that on

[illegible] the Journal

[illegible] at paper Colonel [illegible] of other ranks of [illegible] in its various aspects [illegible] mil Modaro Wuilaine [illegible] of aeroplanes as weapons [illegible] stimulated an interesting [illegible] bing the propaganda [illegible] direction against the [illegible]

The fourth paper dealt with [illegible] Army It is interesting [illegible] (1) employed as Instructo [illegible] in which every pilot [illegible] ated against accident to th [illegible] Colonel Capelo of Czecho-Slovakia [illegible] Human Flight discussed [illegible] s of oxygen by pilots He [illegible] suffer in [illegible] xygen easily unless they [illegible] they are [illegible] Thus pilots of 33 years of [illegible] while pilots of 34 years have a ceiling of 23 000 f

The sixth paper dealt with [illegible] the Hungarian Army during the period 1931 [illegible] Romania discussed his experiments [illegible] wounded

The eighth paper was [illegible] Poland on the subject of Pneumatic Pl [illegible] papers followed on the subject of evacuation [illegible] psychiatry The Swiss Army Medical S [illegible]

The Secretary Col Modern Von [illegible] of Liege is [illegible] varied and valuable discussion [illegible] responsible [illegible]

Correspondence.

LATERAL DERANGEMENT OF THE KNEE

TO THE EDITOR OF THE JOURNAL OF THE ROYAL NAVAL [illegible]

SIR,—With reference to the very interesting [illegible] Captain Mansell Jones' "Internal Derangement of the Knee" in the [illegible] I feel that it is of interest to record a case which has [illegible] the soundness of Bilke's opinion tendered to leave [illegible] cartilage as possible This case also furnishes a further [illegible] meniscus can regenerate

During the latter part of 1936 I assisted at an operation [illegible] a young man and a typical bucket handle lesion was found [illegible] joint The handle portion of the cartilage was [illegible] decided to remove this part only Convalescence was [illegible] the patient returned to duty

Early in 1938 he returned to hospital [illegible] symptoms following a mild twist when [illegible] that since his operation the knee had been [illegible] had full confidence in it

I explored the joint a second time and to my astonishment found a "bucket handle" lesion similar to the previous one [illegible] cartilage as could be taken away through the anterior [illegible] the patient made an uneventful recovery I saw him [illegible] when he had no complaints

W

It [illegible] is always a lesion of the [illegible] when [illegible] ruptured and the result [illegible] of the coron[illegible] [illegible] fibrille meniscus which [illegible] liable to [illegible] from minor causes

[illegible] of the knee may simulate a torn cartilage very closely and [illegible] can be cured just as effectively by manipulation as by meni[illegible] have this to be the state of affairs where an arthrotomy gives negative [illegible] but a positive result. I am, sir, yours &c.,

[illegible] T. N. D'Arcy,
Surgeon Commander

FATAL ANAPHYLAXIS

THE JOURNAL OF THE ROYAL NAVAL MEDICAL SERVICE

Sir,—I feel that perhaps my choice of title for the clinical note "Fatal Anaphylaxis" which I am given to understand you will publish in the next number of the Journal is unfortunate and may lead to readers wondering how I define "anaphylaxis." In Gould's medical dictionary anaphylaxis is described as "Oversusceptibility decreased resistance to the action of subsequent doses of a toxin or [illegible] from this case might very well be described as one of oversusceptibility. I must own that I used the title for want of a better one and bearing in mind a picture which was published during the War of 1914-18 depicting a famous soldier taking cover in a shell hole, I shall be very glad to hear from any critic who can suggest a better title.

I am, sir, &c.,
R.N. College, O. D. Brownfield,
Dartmouth *Surgeon Commander*
May 10, 1939

DENTISTRY IN THE SERVICES

TO THE EDITOR OF THE JOURNAL OF THE ROYAL NAVAL MEDICAL SERVICE

Sir,—I should be grateful if you would allow me through your columns to contradict certain misapprehensions which may have been caused by the two following statements which have appeared recently:—

(1) *Post Graduate Medical Journal*, April 1939. Mr. John Bunyan: "In the Navy the practice of dental surgery beyond mere routine is practically prohibited. The rule is so inflexible that any surgeon who wishes to try out new ideas in preventive methods is definitely discouraged."

(2) *St. Mary's Hospital Gazette*, April, 1939: "The first speaker was Mr. John Bunyan, a dental surgeon, who said that State medicine as exemplified in the fighting Services . . . was rotten."

These statements in no way coincide with my own experience. They are, in fact, misleading and calculated to reflect discredit on all those who are privileged to hold commissions as dental officers in the Royal Navy and the Royal Naval Volunteer Reserve and who carry out the dental treatment of our senior Service. Undoubtedly, if Mr. Bunyan feels so strongly on this question it seems inexplicable that his constituents should allow him to retain a Commission in the Volunteer Reserve.

There is no doubt that the conditions of service in the medical and dental branches of the Services have improved very greatly. Post graduate facilities are now granted and practitioners are free to treat their patients according to their requirements and not according to their purse. The dental fitness of officers and men is a sufficient tribute to their work.

Yours faithfully,
50 *Bryanston Court*, W.1 Douglas Hallos
May 21, 1939 M.R.C.S., L.R.C.P., L.D.S. Eng.
Surg. Lt.-Com. (D) R.N.V.R.

News of the Service.

ADMIRALTY ORDERS

783.—Fleet Air Arm Medical Examination of Pilots

(C W 1651 (1)—21 4 1939)

A special Medical Board has been formed at the Medical Department of the Admiralty for the examination of—

(a) Candidates for officer training pilots from R N and R M
(b) Candidates for all services under the Air Branch R N
(c) Candidates for R N V R (Air Branch)
(d) Officers undergoing flying training Boarding.

2. Officers and ratings pilots who have been with the Fleet to the Central Medical Board Royal Air Force Duxford Boarding will arrange for examination at the Admiralty. Applications for these examinations will be made in the first place through Headquarters Central Flying School R A F Lee on Solent Hants

809.—Table Linen for R N Hospitals and Sick Berths

(N 2876/38—23 3 1939)

The issue of bleached linen table in the Pattern 662 53 in wide from H M Victualling Yards to R N Hospitals and sick berths in H M ships and Fleet Establishments as well as disused married establishments exchanged for unbleached linen table cloths Pattern 661 15 in wide will normally be applied for on

2 Table linen Pattern 662 72 in wide may in some instances e g at the R N Hospital Malta be too narrow to meet requirements and when this is the case the table cloths Pattern 662 72 in wide should be demanded instead

3 The Manual of Victualling B R 23 Appendix J, Part II (j) will be amended

1030.—Form M 12—Abolition

(Sta 70/39—20 4 1939)

The following has been abolished

M 12 Notes on Working X Ray Machines and the Care of Accumulators

2 Form M 1 Established List of Medical Forms should be amended accordingly

*1220.—Gilbert Blane Medal, 1939 Award

(M D C (C W 7921/39—31 3 1939)

The Gilbert Blane Medal for the Year 1939 has been awarded to Surgeon Lieutenant Commander J Mansel Rees M R C S L R C P D P H R N

*1222.—Fleet Air Arm—Air Gunners Revised Conditions of Service Qualifications and Advancement

(N 3818/39—11 5 1939)

The Undersigned has approved the undermentioned new branch Naval rulings on the Fleet Air Arm details of which are promulgated separately the following paragraphs concerning the new substantive rates of Air Gunners are notified for information and guidance

4 *Medical examinations*—The medical examination for the rating of Air Gunner 3rd class is to take place on volunteering and annually thereafter and the result noted on the Medical History Sheet

The presence of nasal obstruction from a severe rhinitis or nasal varicosity or hemorrhoids is to cause the rejection of the rating

A history of any of the following is to disqualify

Nervous breakdown
Severe headache
Hay fever
Asthma (within 2 years examination)
Recurring chronic bronchitis
Organic or functional heart condition which have unnecessitated prolonged rest
Rheumatismatic fever
Malarial attacks (within 6 months of examination)
Dysentery attacks (within 1 year of examination)
Sunstroke or heatstroke
Rib resection for empyema
Fits sickness or swing sickness

Standard for Hearing

Distance [illegible] with each ear tested separately

Normal [illegible] each eye tested separately

Full [illegible] (whisper intonation test)

Colour [illegible] Lantern test)

Conversational [illegible] form by men whose vision can be improved to 6/6 or better than 6/9

Standard of Hearing

Ability to hear [illegible] at 20 ft., each ear to be tested separately

Applicants who fail to reach these standards

Applicants who fail tests are found to have visual or hearing below the standard laid down are not to be rejected but are to be referred to the Medical Department of the Service concerned for consideration whether the defect is not present to such an extent as to render them unsuited to service.

1226.—Eyesight Standards for Men of the Reserve and Auxiliary Forces.

Revised to comply with the revised eyesight standards laid down in K.R. and A.I. Articles 1128 and 1129.

(A. 6068/38.—11.5.1939.)

The following are the eyesight standards required of men for service in R.F.R.—

Seamen	6/12 using both eyes together; the worse eye not less than 6/24
Signal ratings	6/12 6/18
Leading Stokers and Stokers	6/18 using both eyes together; the worse eye not less than 6/36
Chief Stokers, Stoker Petty Officers and Mechanicians	6/18 using both eyes together; the worse eye not less than 6/36. With glasses 6/6 6/9
Royal Marines and Regulating Branch	6/12 using both eyes together; the worse eye not less than 6/24

2. All R.F.R. ratings should be capable of performing their duties without the aid of glasses, except those serving in ratings in which the wearing of glasses is permitted.

3. Mechanicians, Chief Stokers, Stoker Petty Officers must be able to pass the tests laid down in K.R. and A.I. Article 1128, clause 2.

4. R.N.R., R.F.R. Regulations will be amended in due course.

5. The standards and regulations applicable to the following forces will be used in the re-determination of medical references:—

R.N.R. B.R. 68. R.N.R. Regulations (note).
H.N.V.R. B.R. 65. R.N.V.R. Regulations, Appendix VI.
R.N. Shore Signal Service. B.R. 64. S.S.W. Instructions, Article 8.
R.N. Shore Wireless Service. The same regulations as for R.N. Active Service (A.F.O. 1224/38.)
Royal Marine Police. O.U. 5360 (with amendments).

1228. Sick Berth Petty Officers Efficiency Medal.

(A. 2866/39.—18.5.1939.)

The Sick Berth Petty Officers Efficiency Medal for 1939 has been awarded to Sick Berth Petty Officer Walter S. Wate, official number D.M.N. 42307.

2. Sick Berth Petty Officer of the Clothers part division may be recommended for the award of the medal for 1940 for three services during 1939.

3. The number of forwarding recommendations to be published in the Appendix to the Navy List at page 462 of the December 1938 edition.

1246.—X-Ray Apparatus, Service Afloat—Replacement of Old Type Machines.

(M.D.G. 4668/39.—18.5.1939.)

Medical officers of H.M. ships in which the old type of X-ray apparatus (Dean's) is still in use are to furnish a den and direct to the Admiralty (Medical Department) for a machine of the new type. The voltage of the electrical supply should be stated. Upon receipt of the new apparatus the old one should be returned to the nearest Naval Hospital for transit to England.

H.M. Ships receiving Victor machines are to note that the wooden packing cases in which they are contained are for future transport when required.

2. Double coated and double wrapped films (12 and 10 in. by 8 in.) should be demanded for use with the new machines when the present stocks of single coated films have been utilized.

3. In addition, Medical Officers may demand X-ray paper size 10 by 8, 2 dozen sheets, and also an additional intensifying screen 10 by 8 in. to complete the pair necessary for use with the new type machines.

***1378 — Blood Transfusion**

(N 1082 83 — 3s 5 1939)

Information is required of naval ratings of all branches and Royal Marines who will be willing, if called on in emergency, to act as donors of blood for transfusion with a view to arranging for immediate transfusion the necessary patients in naval medical establishments both ashore and in H.M. ships and vessels.

2. The giving of blood for transfusion purposes involves only slight discomfort to the donor. No ill effect on the donor's health or subsequent state of health is known to result from the operation, and, other than a passing feeling of faintness which may last for a few hours, the donor suffers no inconvenience. The risk of injury to the donor is negligible and a short certificate will not be granted, but in the very rare event of any case occurring in which a permanent disability has arisen from the gift of blood for transfusion purposes such disability will be regarded as attributable to the naval service (provided that the disability is not due to negligence or misconduct on the part of the donor).

3. On each occasion of the gift of blood for transfusion a note (giving the appropriate particulars) will be made out in duplicate, the counterfoil being sent to the local naval medical officer in charge of the hospital or ship concerned. A record of the gift of blood and the details of the donor's medical history sheet.

4. Except in connection with the sanction of medical officers of the Army no medical practitioner will be allowed to draw off blood without the personal consent in each instance of the Director of Medical Services, which will be given only if necessary and after discussion with the Medical Officer in Charge.

5. It is hoped that blood will be considered as one of the duty ships in addition to the ships and establishments which are specially mentioned in the Navy List as being, to a limited extent, equipped for the purpose of blood transfusion, but any necessary transfusions required will be carried out in any ship, to a limited extent.

6. Commanding Officers will arrange that the crews of ships sent to Home ports for blood tests shall not thereby be prejudiced as regards their next leave. It is expected that the transfusion of blood will be carried out in the ship's sick bay, and that the donor will be back on duty in a few hours.

7. Volunteers should be between the ages of 18 and 45 years, and their blood group must be noted in their medical history sheet and on the service identity disc.

8. Until sufficient volunteers have been enrolled, blood transfusions are to be restricted to all ships and establishments so that such transfusions may be carried out by readily available personnel in emergency.

CERTIFICATE OF GIFT OF BLOOD FOR TRANSFUSION PURPOSES

THESE ARE TO CERTIFY the Right Honourable the Lords Commissioners of the Admiralty that

(Name in full) (Rank or Rating) (Official or Regimental No.)

.....

having volunteered to give his blood for transfusion purposes did on the

.....

(Date) gave (Number) of blood at Hull

and has been duly noted in his Medical History Sheet

Personal description { Age about years Born at or near
Height ft. ins. Hair Eyes
Complexion

Particulars of Marks or Scars

Date 19

Signature of Medical Officer who performed the operation of blood transfusion

Rank

Signature of Medical Officer in Charge of Establishment

Rank

1351.—Forms M 146 M 147 M 148 M 149 and M 150.—Introduction.

(M D G 4910/39.—28.5.1939.)

The following forms for use with the loose leaf ledger system of accounting for medical stores have been added to the list of establishment forms:—

M 146	Abstract of issues of Surgical Dressings
M 147 (small)	Abstract of issues
M 147 (large)	Abstract of issues
M 148	Abstract of monthly condemnations of Clothing and Bedding etc
M 149	Abstract of breakages of China and Glass
M 150	Abstract of weekly issues of Food

Form M 147 (large) is the form formerly known as "Abstract of Issues of Small Stores."

Books of the above forms will be maintained at R N Stores Depot Royal Victoria Yard Deptford.

Form M 1 should be amended accordingly.

1423.—Scale of Medical Stores for the Service Afloat. Additional Stores for "Tribal" Class Destroyers.

(M D G 9551/39.—25.5.1939.)

In addition to medical stores in accordance with Scale No. 4 the following articles are to be issued in future to all "Tribal" class Destroyers in which a Sick Berth Petty Officer is borne:—

Scissors 5 in	1 pair
Forceps dressing	1 "
" splinter	1 "
" Spencer Wells	1 "
Threaded Needles	1 set
Lancet	1 No
Trocar and Canula	1 "
Eye Spud	1 "
Enema Syringe	1 "
Hypoderm c Syringe and Needles	1 "
*Morphine Sulph Ampoules of 1 grain in 5 minims	12 "
*Ophthalmic Tabelle Cocain Hydrochlor gr 1/20	20 "
Tabelle Acid Acetyl Salicyl (Aspirin) gr 5	200 "
Salol or Pellets Acid Tannic Co	50 "
Hyperol	6 ozs
Calico ball bleached	6 yards
Gauze white	24 "
Forms M 177A	

* To be in the charge of the Commanding Officer and kept by him under lock and key.

Books of Scales of Medical Stores for the Service Afloat should be amended accordingly.

1641.—Nitrous Oxide Gas for Dental Purposes. Instructions for Obtaining.

(M D G 6768/39.—15.6.1939.)

As some misapprehension exists as to the procedure to be followed for refilling N_2O cylinders for dental purposes the undermentioned instructions are to be observed in future.

Dental officers serving in H M ships and establishments shown below are to obtain their supplies in the manner indicated.

H M Ships and Hospital Ships	Full cylinders to be obtained in exchange for empty ones from the nearest Naval Hospital or Depôt of R N Medical Depot
R N Hospitals Haslar Plymouth Chatham Hong Kong and Malta	Full cylinders to be drawn from general hospital stocks or empty ones sent to Contractor for refilling through the Superintending (or Senior) Pharmacist
Sub-establishments named in Article 551 in connexion with Naval Hospitals (except H M S *Caledonia*)	Full cylinders to be obtained in exchange from the Naval Hospital indicated in Article 551
Deal R M Infirmary	Empty cylinders to be sent to Contractor for refilling
H M S *Gunjes*	Full cylinders to be obtained in exchange for empty ones from Depôt of Medical Depôt
H M S *Caledonia*	
H M S *Beacon* in (Portland Dental Surgery)	Full cylinders to be obtained in exchange from Haslar R N Hospital
R N Hospitals Bermuda and Esquimalt	Refilling of cylinders to be arranged by local purchase

[illegible] in which officers sends [illegible] will [illegible] [illegible] [illegible] being maintained [illegible] Medical establishment [illegible] [illegible] [illegible] [illegible] awarded [illegible] [illegible] [illegible] Department [illegible] [illegible]

BIRTHS

[illegible] — [illegible] 1939, to Alison, wife of Surgeon [illegible] — [illegible] (Page Bey), [illegible]

[illegible] — [illegible] Susan (née Longbough) [illegible] R.N., a daughter—Sarah [illegible]

[illegible] — On March [illegible] at Plymouth, to Joan (née Haslam), wife of Surgeon [illegible] R. [illegible] Proctor, R.N., a daughter—Jennifer Joan.

OBITUARY

We regret to report the following deaths and extend our deepest sympathy to the relatives:

Surgeon Captain [illegible] Eustace Ashby (Retd.), who was born in 1875 [illegible] at Charing Cross Medical School and took the Conjoint Diploma in 1902. [illegible] Service in November of that year [illegible] with the exception of one shore appointment [illegible] Dockyard Portsmouth in 1910 he served all his [illegible] Among other appointments he was in *Leviathan* [illegible] 1903 and in *Philomel* in [illegible] 1911. [illegible] promoted to Staff Surgeon in 1910.

During the War he was [illegible] H.M.S. *Russell* at the Dardanelles [illegible] *Canopus* [illegible] *Royal* [illegible] Staff Surgeon in 1917.

In 1920 he was sent to R.M. Division [illegible] in 1926 he served at R.N. Infirmary [illegible] After a final appointment in the Reserve Fleet he was placed on the Retired List in January 1928 having reached the age limit with the rank of Surgeon Captain. He died on April 21, 1939.

Surgeon Commander Harry Forrest Stephens (Retd.) was educated at the University of Aberdeen [illegible] and entered as Temporary Surgeon during the Great War. He was [illegible] in 1920 [illegible] December 1918 [illegible] promoted to the rank of Surgeon Lieutenant Commander. Throughout the War he [illegible] was commended for good work in the treatment of wounded [illegible] commented on [illegible] [illegible]

In 1930 he went to [illegible] in 1933 [illegible] in 1935 to [illegible] in 1936 [illegible] R.N. [illegible] He was finally [illegible] on the Retired List on January 21, 1940 [illegible] Surgeon Commander Stephens died on April 18, 1939.

HONOURS

The following Honours have been bestowed on the occasion of the celebration of His Majesty's Birthday:

To be Knight Commander of the Most Honourable Order of the Bath (K.C.B.): Surgeon Vice-Admiral [illegible] Nicholls, C.B., M.B., Ch.B., L.R.C.P., K.H.P.

To be [illegible] Military Division of the Most Excellent Order of the British Empire (C.B.E.): Surgeon Captain L. Darby, M.B., Ch.B., R.A.N.

GILBERT BLANE MEDAL, 1939—AWARD

The Gilbert Blane Medal for the year 1939 has been awarded to Surgeon Lieutenant Commander J. [illegible] M.R.C.S., L.R.C.P., D.[illegible]H., R.N.

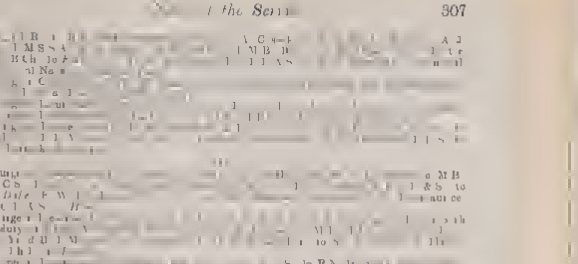
RETIREMENTS

PROMOTIONS

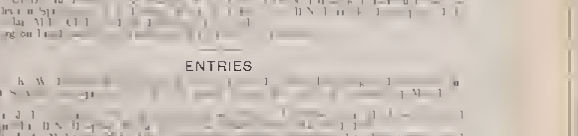
APPOINTMENTS

Match

Attn



ENTRIES



TRANSFERS TO PERMANENT LIST



WARDMASTERS

APPOINTMENTS

Acting Warrant Wardmaster D Burnett to R N Hospital Plymouth

RETIREMENTS

Wardmaster Lieutenant W H J Cook placed on the retired list on [illegible] of age regulations April 24 1939

Wardmaster Lieutenant J W Biddlecombe placed on the retired list on account of age regulations April 11 1939

PROMOTIONS

[illegible]rd Wardmaster J W Biddlecombe to be Wardmaster Lieutenant April 13 1939

[illegible]ter Wardmaster J Cowin to be Wardmaster Lieutenant April 14 1939

Warrant Wardmaster W C Collins to be Commissioned Wardmaster April 13 1939

Warrant Wardmaster M A Bull to be Commissioned Wardmaster April 14 1939

Staff [illegible]tt Thompson to be Acting Warrant Wardmaster April 13 1939

[illegible] W T Page to be Acting Warrant Wardmaster April 15 1939

ROYAL NAVAL VOLUNTEER RESERVE

APPOINTMENTS (TRAINEE)

March

Surgeon Lieutenant W H Edwards to *Repulse* J H R Paul to *Calypso*

Probationary Surgeon Lieutenants H Scrimgeour to R N Hospital Chatham R I Thompson to R N Barracks Devonport

April

Surgeon Commander R Hall M B B Ch to R N Hospital Port Edgar

Surgeon Lieutenant Commanders F E Stabler M B to *Resolution* D MacCraig to R N Barracks Chatham E I Hardcastle to R N Hospital Haslar M G Stratford to R N Hospital Haslar

Probationary Surgeon Lieutenants J F M Ayoub to R N Barracks Chatham H W Clegg to *Revenge* H A Lockhead to R N Hospital Haslar C P Hoy to *Resolution*

Probationary Surgeon Lieutenant (D) J A Atkinson to R N Hospital Haslar

May

Surgeon Commander W H Sulcher to *Courageous*

Surgeon Lieutenant Commanders R F Woolmer to R N Hospital Port Edgar G M Tonner to R N Barracks Chatham

Surgeon Lieutenants J L Holgate to R N Hospital Chatham A R Thomas to R N Hospital Haslar

Probationary Surgeon Lieutenants J A Chivers to R N Hospital Chatham H Miller to *Revenge* J N Case to *Courageous*

RETIREMENTS AND RESIGNATIONS

Surgeon Lieutenant-Commander A Elliott resigned April 12 1939

Surgeon Lieutenant A P Rutherfurd commissioned terminated on entry into R N March 30 1939

Surgeon Lieutenant H I Phillips commission terminated on entry into R N March 30 1939

Probationary Surgeon Lieutenant I G Rubin resigned April [illegible] 1939

Lieutenant Surgeon Lieutenant F W K Brown resigned April 28 1939

ENTERED

Messrs J P Phillips M B B S and A Ruffhead M B B S, entered as Probationary Surgeon Lieutenants (D) R N V R 21st Durham February 21 1939

Messrs H F Rutherfurd M B B Ch and G C Adkins M R C S entered as Probationary Surgeon Lieutenants, Lieut (D) Tyneside Division March 14 1939 W F Fraser M R C S L R C P entered as Probationary Surgeon Lieutenant Lieut Sussex Division March 14 1939

Messrs M Whitteridge M R C S L R C P L D S entered as Probationary Surgeon Lieutenant Lieut London Division March 27 1939

Mr R C J Dill entered as Probationary Surgeon Lieutenant Lieut R E Scottish Division May [illegible] 39

PROMOTIONS

[illegible] promoted to [illegible]

[illegible] Commander [illegible]

[illegible] Commander C [illegible]

[illegible] Commander H W [illegible] M B O P H

[illegible] Lieutenant J N M [illegible]

Surgeon Lieutenant H [illegible]

Probationary Surgeons [illegible]

[illegible]

OTHER

Surgeon Lieutenant Colonel [illegible] promoted [illegible] to 1st H London Division

Surgeon Lieutenants [illegible]

Retires to be borne from [illegible]

Probationary Surgeon [illegible] Division

QUEEN ALEXANDRA'S ROYAL NAVAL NURSING SERVICE

HONOURS

The following Honours [illegible] on the occasion of His Majesty's Birthday Royal Red Cross 2nd Class (A R R C) Miss M Inchbold Matron [illegible] R N N S

APPOINTMENTS

Superintending Sister Miss N S Garnett to R N Hospital Plymouth May 1911

Superintending Sister Miss P M Whitehead to R N Sick Quarters Shotley June 1939

Nursing Sister Miss L K Pritchard to H M Yelling Dartmouth May 1939

Nursing Sister Miss F M Blundstone to R N Hospital Port Edgar June 1939

RESIGNATIONS AND RETIREMENTS

Superintending Sister Miss L M E Hall A R R C superannuated June 6 1939

Nursing Sister Miss J M L Ogilvie resigned May 1st 1939

Nursing Sister Miss D K Drake resigned June 15 1939

PROMOTIONS

Nursing Sister Miss P M Wilkinson to be Superintending Sister June 1 1939

ENTRIES

Miss E L Stern entered as Nursing Sister on probation and appointed to R N Hospital Haslar May 25 1939

Miss H J Shoolbread entered as Nursing Sister on probation and appointed to R N Hospital Chatham June 15 1939

Miss M G E Maher Loughran entered as Nursing Sister on probation and appointed to R N Hospital Chatham June 6 1939

THE ANNUAL DINNER OF THE ROYAL NAVAL MEDICAL CLUB

The Annual Dinner of the Club was held at the Empress Rooms Trocadero Restaurant, on the evening of April 12 1939

The Medical Director General presided over a record assembly of 174 members On his right hand sat the Paymaster Director General of the Navy Sir Arthur Strickland, K C B and on his left Dr Rowlands There were also present at the high table Surgeon Vice Admiral Sir Reginald Bond K C B Sir Hubert Bond, K B E Surgeon Vice Admiral Sir Basil Hall K C B

G Buckeridge C [illegible] Admiral C V [illegible] U S C [illegible] U S Navy Major G P Wilkinson U S [illegible] M Navy and Surgeon Rear Admiral [illegible] M Guild the organiz[illegible]

I greetings and good wishes from R N Hospital [illegible] ton General proposed the toast of the Royal Naval [illegible]

[illegible] very great pleasure to see such a fine attendence at this [illegible] we had 163 coming a record by about twenty This [illegible] are reaching 171 We have eighteen new members [illegible] first our Naval Medical Club is in a very flourishing [illegible] interesting one in the history of the club Founded [illegible] the Great War in particular some years were [illegible] by fifth Dinner—our Silver Jubilee At that first [illegible] seventy three with I am sure no one will enjoy [illegible] General in the Chair Sir James Porter To night [illegible] joined at that first dinner W L Martin, N S [illegible] C S Miller Montague Knapp and C T Baxter [illegible] welcome to the numerous guests and express the [illegible] very pleasant evening I would especially like to [illegible] Medical Services of the American Navy and the [illegible] Navy Sir Arthur Strickland [illegible] should meet on such an occasion as this and [illegible] perplexities which confront us all in [illegible] The world crisis carries my thoughts [illegible] gives me an opportunity of thanking all those who [illegible] the call of mobilization retired officers, officers of the Royal Naval [illegible] Reserve the veterans of our Service who are over age [illegible] and eminent consultants, who volunteered to go anywhere and [illegible] It was a useful exercise well carried out, but I sincerely hope not a [illegible]

Before [illegible] my further I must make my appeals, first of all for our Naval Medical [illegible] Benevolent Fund It was suggested to me that I should [illegible] this appeal [illegible] by audience was bored with it However, last year after my appeal I [illegible] from a former Temporary Surgeon a most generous gift, and I think [illegible] I could urge more Active Service Officers to pay a guinea [illegible] annually [illegible] some form of insurance I know

My [illegible] appeal is on behalf of the Central Council of the Sick Berth Staff Association [illegible] Surgeon Rear Admiral Falconer Hall—the Treasurer of the Fund—is still [illegible] able to be here I am sure we all wish him a speedy recovery [illegible] last year I [illegible] to make this appeal he told me he received fifty contributions after my appeal last year Surgeon Captain Montague Knapp has resumed duty and I will be glad to receive donations or subscriptions to a most deserving cause

My third appeal will not touch your pockets the Editors of the Naval Medical Journal would like more contributions A journal cannot be run without them Our Journal has a wide circulation—I might say World Wide The Editors receive letters asking for permission to use articles from the Journal—evidence that it is appreciated

Last year I talked to you about tuberculosis and rheumatism Dr Ridehalgh the Preston School [illegible] with [illegible] under the [illegible] of the Medical Research Council, is continuing his X ray investigation at two of our training establishments I think I can say that results at these two establishments rarely enter with active

[illegible]
necessit[illegible]
rheum[illegible]
the help [illegible]
the Council for [illegible]
monetary assist[illegible]
appointment of a [illegible]
of Edinburgh Uni[illegible]
with Naval Medic[illegible]
Board of Admiralt[illegible]
practical interest [illegible]
cover the cost of spec[illegible]
not been content to wait [illegible]
changes in our trainin[illegible]
for the way in which t[illegible]
changes" I am glad to [illegible]
signs of improvement

No doubt you have not[illegible]
for a new Hospital Ship [illegible]
built as a Hospital Ship to [illegible]
10,000 tons a speed of 1[illegible]
time Much time and th[illegible]
believe she will prove to [illegible]
Medical Service in particular [illegible]
much we shall regret the pass[illegible]
wonderful work in all parts of t[illegible]
moment in Spain

Last month we opened [illegible]
South Queensferry and at the [illegible]
Caledonia merely retaining a [illegible]
hospital on shore will be more suit[illegible]
Ship

We have taken over from t[illegible] location
pilots and others of the Fleet Air [illegible] personnel
ently at the Medical Departm[illegible]
aspects of aviation will furn[illegible]

A word about personnel It [illegible] seems
that the shortage of Sick Berth [illegible]
am very much pleased that I [illegible]
the senior ranks of this very [illegible]
Lieutenant and three Warrant W[illegible]
us as fast as I should like o[illegible]
commitments I fear a slo[illegible] local
profession is approaching [illegible] will be
reflected by an increase in our [illegible]

I must thank the Surgeo[illegible] Medicine and
Surgery at Haslar and the D[illegible] help they have
given me in reorganizing the [illegible] entered in their
officers On the whole we [illegible] them with
experience behind them I [illegible] Mehaffey
Surgeon Captain Dawson on [illegible] Royal College of
Physicians

Dental Officers are not p[illegible] to cope with
the dental requirements of o[illegible] proposals
which I believe would [illegible] Moreover these

proposals are still under consideration I am therefore unable to announce to night an Easter Gift for Dental Officers

Now gentlemen I have done, except for one pleasant duty, to propose a vote of thanks on behalf of all of us to our Honorary Secretary for all the hard work he has put into the organization of this dinner

Notices.

NAVAL MEDICAL COMPASSIONATE FUND

At the Annual General Meeting of Subscribers to the Fund held on April 12 1939 Surgeon Vice Admiral P T Nicholls, C B Medical Director General of the Navy in the Chair the following Officers were elected to serve as Directors for the ensuing twelve months —

To represent the Active List

Surgeon Captain K H Hole O B E
Surgeon Captain G G Vickery O B E
Surgeon Captain W H Murray
Surgeon Commander J G Holmes

To represent the Retired List

Surgeon Rear Admiral C K Bushe, O B E
Surgeon Captain C T Baxter

At the Quarterly Meeting of Directors which followed the General Meeting of Subscribers six cases were considered and the sum of £200 voted to the applicants The following is a summary of the cases relieved —

Two daughters, aged 54 and 57, of a Deputy Inspector General who died in 1811 Both sisters are in poor health and their small income is insufficient for their needs Voted £15 each Total amount received from the Naval Medical Compassionate Fund at various awards, £480

Daughter aged 63 of a Fleet Surgeon who died in 1893 Applicant has a small income Voted £40 Total amount received from the Fund at various awards is £285

Widow aged 75 of a Fleet Surgeon who died in 1916 Applicant has a son who is partially dependent upon her owing to ill health Voted £45 Total amount received from the Fund at various awards is £510

Daughter, aged 69, of a Surgeon who died in 1915 Has a small income Voted £25 Total amount received from the Fund at various awards is £290

Widow, aged 44, of a Surgeon Captain who died in 1935 Applicant is in receipt of a widow's pension and allowance for two children Voted £60 Total amount received from the Fund at various awards is £280

NORTH PERSIAN FORCES MEMORIAL MEDAL

J Simson Esq L R C P I & L M, L R C S I & L M D T M & H Eng D M R E Capt, Medical Officer, Nigeria has been awarded the North Persian Forces Memorial Medal for the year 1938 for his paper on 'Yaws and its Treatment in the Bamenda Division of the Cameroons under British Mandate, published in the *West African Medical Journal* Volume X No 1, October, 1938 pages 10 34

The [illegible] Memorial Medal is awarded [illegible] the best paper [illegible] or Hygiene published in [illegible] during the preceding [illegible] by a Medical Officer of under [illegible] Service, of the Royal Navy [illegible] Army Medical Corps Royal Air Force Indian Medical Service or of the Colonial Medical Services

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BURROUGHS WELLCOME AND CO EXHIBIT, IRISH MEDICAL EXHIBITION 1939

MANY important therapeutic discoveries were represented in the Burroughs Wellcome and Co exhibit affording evidence of the valuable work accomplished by the House in making the results of recent research available to the general practitioner

Prominence was given to preparations of Stilboestrol the new synthetic oestrogen which faithfully produces the action of the natural hormone Stilboestrol is in fact about four times as potent as œstrone and it is of interest to note that oral administration of the product appears to be as effective as intramuscular injection The preparations displayed included Tablets Stilboestrol for oral administration and Hypoloid Stilboestrol for injection Stilboestrol dipropionate now under clinical trial appears from laboratory evidence to have a more lasting effect than Stilbœstrol without undue reduction of activity Corresponding preparations of this ester were also on view

The bacteriostatic action of Sulphonamide P (Sulphanilamide) was demonstrated by means of a screen carrying photomicrographs which attracted much attention Increasing clinical experience with this compound has more clearly defined its sphere of usefulness and has established it as one of the most important discoveries of recent years Two products were displayed— Tablets Sulphonamide P, for oral administration and Wellcome Sulphonamide P, a crystalline powder suitable for either parenteral or oral administration

Considerable interest was shown in Neamido, a 25 per cent solution of nicotinic acid diethylamide which has been found to be a valuable respiratory and circulatory stimulant Among the indications for its use are pulmonary and circulatory complications arising post operatively or during acute infections coronary thrombosis barbiturate poisoning and asphyxia neonatorum Neamide is issued for oral administration in bottles of two sizes the smaller being accompanied by a pipette for measuring the dose Hypoloid Neamido, which is also available is suitable for either intravenous or intramuscular injection

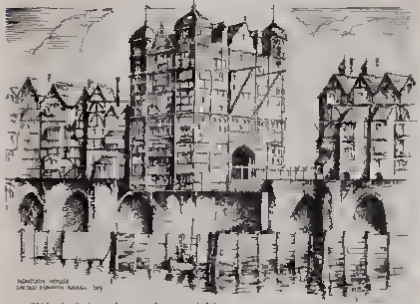
The mandelic acid treatment of urinary infections has been considerably simplified by the introduction of Wellcome Calcium Mandelate Compound which has been shown to be as effective therapeutically as the soluble mandelates formerly in use and at the same time free from many of their disadvantages Wellcome Calcium Mandelate Compound is a pleasantly flavoured powder which may be taken in water or milk

A wide range of serological products prepared at the Wellcome Physiological Research Laboratories was on view Prominent among those were the new refined antitoxic sera produced by improved methods which have resulted in increased concentration and reduced protein content These included Wellcome Refined Diphtheria Antitoxin—Globulins (4 000 Ehrlich Units or more per c c) Wellcome Refined Streptococcus Antitoxin (Scarlatina)—Globulins (1 000 D S A Units or more per c c) Wellcome Refined Tetanus Antitoxin—Globulins (8 000 International Units or more per c c) and Wellcome Refined Gas Gangrene Antitoxin (Perfringens)—Globulins (1 600 units or more per c c) This section of the exhibit also included Wellcome Tetanus Prophylactic Formol Toxoid, Wellcome Tuberculin P P D Purified Protein Derivative and the range of Wellcome Diphtheria Prophylactics for active immunization

Another [illegible] Burroughs Wellcome Physiological Laboratories which aroused [illegible] was 'Styramide' [illegible] Viper Venom. This product [illegible] and efficient [illegible] convenient form, and is widely [illegible] or surgery, as well as [illegible] the treatment of external wounds [illegible].

Vitamins [illegible] and concentrates [illegible] well represented on the stand [illegible] Vanadol Co. [illegible] Malt Extract a pleasant [illegible] An illustration of [illegible] Vanadol Ryzamin [illegible] Bile [illegible] [illegible] a palatable [illegible] rich content of vitamin [illegible] [illegible] Public [illegible] Improved Vitamin B [illegible] [illegible] Vanadol Cereal [illegible] Calefacient and Tabloid [illegible] [illegible] [illegible] Protol.

TRADITIONAL LONDON



Old London Bridge. Until 1000 for six years. The present bridge and consists of 19 arches. Its appearance was lined with buildings including the famous Nonsuch House, an enormous pile four storeys high, with cupolas and turrets at each corner. It was brought from Holland and fastened together with wooden pegs instead of nails

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Journal
of the
Royal Naval Medical Service.

Articles

PREVENTIVE MEDICINE IN RELATION TO AVIATION[1]

BY AIR COMMODORE H. E. WHITTINGHAM, C.B., M.D., F.R.C.P., D.P.H.

Aviation has progressed to a remarkable degree during the last decade and more especially in the past three years when this country like many others has become air minded and record after record has been broken. In 1935 when King George V reviewed his Air Force at Duxford on the occasion of his Jubilee the expression that there was a lot of sky was common. Now the picture is entirely changed; aeroplanes are to be seen daily; there are over 200 service and civil aerodromes excluding private and privately owned ones in England alone; and all types of aircraft have been greatly improved as regards carrying power, comfort, speed and range of flight. To-day Service machines travel at speeds varying between 180 to 300 miles an hour and have flown non-stop for 7,162 miles; and the new air liners of Imperial Airways have a top speed of 250 miles an hour and cruise at 200 miles an hour while carrying 40 passengers plus cargo. Machines planes leave this country daily for foreign parts and air routes to various parts of the Empire have been opened and speeded up. The popularity of flying, and the air mindedness of the nation have been shown by the King's visits by aeroplane to R.A.F. stations; the recent holiday trip of the Duke and Duchess of Gloucester to East Africa; the historic journeys by Mr. Chamberlain to and from Germany during the crisis of September, 1938, when time was most important; the flights of Cabinet Ministers and other high officials to outposts of Empire to help settle some difficult problem by personal contact; and the world tour of a picked body of business men

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[1] Inaugural Address at the Royal Naval Medical School, Royal Naval Hospital, Haslar, 1939. Published by permission of the Royal Society of Medicine.

for financial gain and by Service men to obtain the maximum number of days leave at home

This development of aviation is not an unmixed blessing for, though it has greatly increased the rapidity of transport between one country and another and between continents—and so has brought various parts of the world closer together as regards time—it is a most deadly implement of war and there is the added danger of aircraft conveying infectious diseases, either by means of passengers or insects This danger was foreseen several years ago by the health authorities in many countries, with the result that the International Sanitary Convention for Aerial Navigation was drawn up at the Hague in April, 1933, and has since been ratified by practically all countries in the world

In this paper it is proposed to deal with preventive medicine as far as it affects aviation, under two main headings —

I —The protection of communities against diseases liable to be imported by aircraft

II —The protection of flying personnel against diseases due to flying

I —The Protection of Communities against Diseases Liable to be Imported by Aircraft

The safeguarding of the masses against infection is of greater importance in public health administration than that of the individual, and it is justifiable therefore, to consider this matter first Journeys by air from countries where the major infectious diseases (cholera plague smallpox typhus, and yellow fever) are endemic to non-infected yet susceptible countries are so rapid that they are usually completed well within the incubation periods of these diseases This was pointed out by Air Commodore D Munro (1926), and Mossey (1933), and Table I demonstrates that the danger of importing these diseases to various countries by air is considerable unless adequate protective measures are undertaken by all concerned

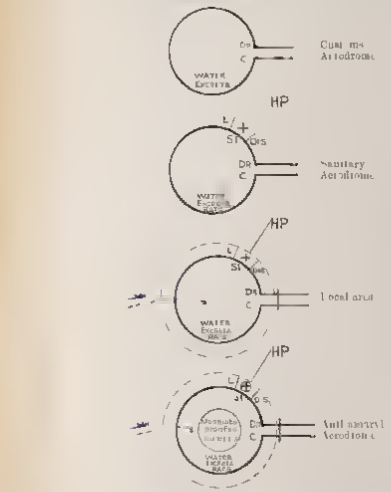
Table I —Showing the Relationship between the Incubation Periods for the Major Infectious Diseases and the Time Taken to Complete the Journey by Air Between Endemic Zones and the United Kingdom

Disease	Incubation period (days)	Endemic area	Time taken to complete journey by air from endemic centres to U K (days)
Cholera	2-5	India	4 5
		Iraq	2-3
Plague	2 6	India	4 5
		Iraq	2 3
		East Africa	4
		West Africa	3 5
		South America	4 6
Smallpox	10-14	India	4 6
		Iraq	2 3
Typhus	5 12	Central Europe	1
		Russia	2
Yellow fever	3 6	West Africa	3-5
		South America	4 5

The administrative machinery for the health control of air traffic is based on the International Sanitary Convention for Aerial Navigation, 1933, which specifies the maximum measures that may be imposed for this purpose, but leaves their actual application to each country concerned, the general aim being to make the necessary regulations as uniform as possible to lessen inconvenience to passengers and to cause the minimum of delay to air transport, otherwise the main object of such mode of travel would be defeated. The Office International d'Hygiène Publique, in Paris, through its Air Navigation Quarantine Commission deals with the application of the Convention and continually keeps matters concerning the sanitary control of aircraft under review, from an international aspect, while through its delegates it maintains a close touch with the various governments who have ratified the Convention. It is in fact an international health-controlling bureau with the power to draft international agreements. The Health Organization of the League of Nations, on the other hand, provides an international intelligence service which promptly informs the health authorities throughout the world of the incidence of infectious diseases at various ports and airports. This epidemiological information is passed on weekly to the appropriate medical officers of health of each country by the health department of the government concerned, so that they are in possession of up-to-date particulars regarding infectious diseases and epidemics occurring both at home and abroad. Thus, in the United Kingdom, this information is published and distributed by the Ministry of Health weekly through the agency of their Weekly Record of Infectious Diseases at Ports, &c., and by means of notices in the *London Gazette*. From this information medical officers of health of areas containing customs aerodromes furnish the appropriate customs officer and person in charge of each aerodrome with a written list of infected places. In addition, each government has drawn up its own regulations regarding the sanitary control of aviation and in this connection the Public Health (Aircraft) Regulations 1938, issued by the Ministry of Health are designed to prevent the introduction of infectious diseases from abroad into the United Kingdom by aircraft and are applicable to all aerodromes officially recognized for customs purposes for the arrival and departure of all foreign going aircraft which are not permitted to land elsewhere. In the case of a forced landing of an aircraft entering the country from abroad the commander must notify the local authority, or customs or police officer, as soon as possible and the crew, passengers and cargo must not leave or be removed from the vicinity of the landing place until permitted to do so by the local authority; then the aircraft, if infected or arriving from an infected area, should proceed to a sanitary aerodrome; if the aircraft is unable to proceed, the passengers and crew may be allowed to continue their journey by other means provided

that they have given their names and addresses of intended destination to the local authority who forwards the information to the local authority at the intended destination in each instance.

Dealing with the actual working of the International Sanitary



Sanitary Aerodromes and Anti-amaril Aerodromes

FIG. 1.—Diagrammatic representation of various types of [illegible] aerodrome [illegible] to the [illegible] and anti-amaril aerodrome.

[illegible] Aviation for Aerial Navigation it is convenient to consider the various types of authorized aerodrome. Aerodromes on which aircraft legally may make their first landing on entering a country or from which they [illegible] depart are collectively termed "authorized aerodromes" and include [illegible] sanitary and anti-amaril aerodromes as well as certain [illegible] (see [illegible] diagram 1)

[illegible]

one [illegible]
consistent a[illegible]
present in the [illegible]
aerodrome no o[illegible]

(iv) In distri[illegible]
mouse protestin[illegible]
a in amaryl[illegible]
sanitary aerodro[illegible] area [illegible] least a
habitations especially [illegible] of mats [illegible] kept [illegible]
carrying mosquitoes [illegible] provided with [illegible] efficient [illegible]
staff aeroplanes may [illegible] passengers [illegible] first [illegible]
as passengers may [illegible] surveillance [illegible]
tion to ensure freedom from [illegible]

The Sanitary Control of Aircraft

In the case of aircraft arriving from abroad if [illegible] incident occurs or if there is a case or suspected case of [illegible] disease (other than tuberculosis or venereal disease) on board the [illegible] the craft must notify the aerodrome medical officer or customs officer preferably by wireless before arrival if the person in charge of the aerodrome gets this information first, he must notify the medical officer and customs officer immediately

Infected aircraft or those coming from places infected with cholera plague smallpox typhus or yellow fever or those with rodents during [illegible] aboard must not discharge passengers, crew or cargo until after the medical officer has inspected them and declared them free from infection The usual procedure is to isolate in hospital persons showing [illegible] evidence of infection while the contacts may be liberated (depending on the disease and the locality) after giving their names and addresses of destination so that the appropriate local authorities are able to keep the contacts under surveillance during the incubation period of the disease The customs officer is usually the first person to visit an aircraft on arrival

and if it is infected or suspected he orders its detention and forthwith notifies the medical officer and the person in charge of the aerodrome of the fact. If the medical officer does not inspect an aircraft within three hours it is free to leave and, should he not consider it necessary to inspect any aircraft and passengers he may give a liberation certificate in writing to the customs officer concerned. It should be noted that no mail can be detained, disinfected, or destroyed, except packages containing fish, shellfish fruit or vegetables coming from a cholera-infected area.

In brief the sanitary control of arriving aircraft is along the following lines —

(i) Medical inspection of passengers and crew.

(ii) Isolation in hospital of infectious cases other than tuberculosis or venereal disease.

(iii) Surveillance of contacts, usually at home during the incubation period of the disease, after de-lousing in the case of typhus contacts, and ridding of fleas all the contacts; adequate vaccination against smallpox or inoculation against cholera or yellow fever exempts from isolation.

(iv) Disinfection of aircraft and infected articles in cases of cholera, plague, dysentery and typhus.

(v) Disinfestation of aircraft and personal belongings in cases of plague and typhus.

(vi) Disinsection of aircraft in the tropics and subtropics to prevent yellow fever, dengue and malaria-infected mosquitoes from being introduced into the country.

(vii) Deratization of aircraft in case of plague or death of rodents on the voyage.

(viii) Proper disposal of excreta on arrival as it is forbidden to discharge excreta from the air except over the open sea.

(ix) The provision of a safe drinking water supply, protected against mosquito breeding and in the case of cholera the water stored on board the aircraft must be disinfected and emptied out, then the tanks must be further disinfected before filling with wholesome drinking water.

(x) Prohibition of the unloading of fresh fish, shell fish, fruit, and vegetables if there is a case of cholera on board or if the aircraft has come from a cholera-infested area.

As regards departing aircraft passengers and crew are medically examined, if necessary, especially in areas where cholera, plague, smallpox, typhus and yellow fever are prevalent. The aerodrome medical officer may prevent any person who shows evidence of suffering from an infectious disease, from travelling by aircraft. He may also stop the embarkation of close contacts of any of the infectious diseases mentioned above, unless such contacts have been successfully vaccinated against smallpox within three years, or inoculated against cholera recently or against yellow fever within two years,[2] and, in the case of typhus disinfested if necessary. In

[2] No definite period is stated for yellow fever but the yellow fever antibody content of the blood of those inoculated with virus vaccine is considered to be sufficiently high at the end of two years to ensure immunity in the majority of instances.

addition he must ensure that no infected bedding, clothing, or articles, are taken on board and that the aircraft itself is free from infection, e.g. freed of rats in a plague area or disinsected in a yellow-fever zone

This leads to a consideration of the *journey log-book*, which all aircraft engaged on international flights must carry and in which public health matters concerning aircraft and passengers must be entered Such entries should include any sanitary action taken in regard to the aircraft at the port of departure or at places of call *en route* as well as any health items that occur on the voyage, such as the presence in the aircraft of any person who requires surveillance To facilitate the medical examination at the aerodrome of arrival an entry must be made if cholera plague, smallpox typhus or yellow fever has occurred in the area of departure within fifteen days in certain countries especially in the yellow fever zones of the Americas a 'Certificate of origin of passengers is demanded as an additional aid

One hiatus in the International Sanitary Convention for Aerial Navigation is the fact that it does not apply to Service aircraft of any nation Thus, as far as we are concerned unless the Royal Air Force falls into line with the principles and spirit of this Convention preventable disease may be spread by air to civilians and Service personnel alike, especially by aircraft moving from one command to another in tropical and subtropical countries The matter is now under consideration at the Air Ministry, and appropriate Service regulations will shortly be issued

Yellow Fever and Aviation

Yellow fever merits a section to itself for special precautions have to be taken against this disease as the mosquito vector (*Aedes aegypti*) is so prevalent throughout the tropics and subtropics that, if the disease were introduced by means of a human case or by infected mosquitoes, a severe epidemic would result especially as the infection would occur among highly susceptible peoples In fact, the fear of this dread disease spreading to India by air traffic within the incubation period is so great that the Government of India has taken additional precautions to those laid down in the International Sanitary Convention for Aerial Navigation Thus, passengers by aircraft from yellow-fever or suspected yellow fever areas in Africa are not permitted to enter India until nine days have elapsed since their departure from the affected area, and aircraft are not permitted to fly direct to India from such an area unless in possession of a certificate issued by the Egyptian Quarantine Board stating that the aircraft has been adequately disinsected In common with the Dutch East Indies and the Sudan India has prohibited the importation of yellow fever virus even for research purposes As a further safeguard India, Iraq and Egypt have mutually agreed to inform each other by telegram of any air passenger

from a dangerous area while India further demands that a wireless message stating the health condition of the aircraft, be sent to Karachi 24 hours before arrival.

That there has already been a recent spread of yellow fever from the endemic centres in West Africa eastwards is strongly suggested by Findlay's findings in the Malakal district of the Southern Sudan for in 1943 [illegible] per cent of the population tested gave a positive yellow-fever reaction in the mouse-protection test compared with 21 per cent positive in 1938. As *A. aegypti* is present in this district, it is assumed that the infection is of the urban and not the jungle type. Recently, there was a fatal case of yellow fever in a European at Kony, in the Sudan. It is evident therefore that yellow fever is occurring as far east as the Anglo-Egyptian Sudan without classical symptoms and only awaits suitable soil and exaltation of virus to produce a severe epidemic. Though this spread of yellow fever coincides with the opening up of the air-routes from West Africa to the Sudan it cannot be affirmed that this has been the mode of spread of the infection as motor traffic has also greatly developed at the same time, and anti-yellow fever measures are more easily enforced in the case of aircraft than with motor car traffic.

Nowadays air travel is so rapid that an aeroplane departing from the yellow fever zones of West Africa reaches the Sudan in two days, Mozambique in four days, Durban in five days and, by another route, Karachi in five and Calcutta in six days, respectively; all these places are heavily infected with *Aedes*. There is therefore great danger of yellow fever being spread by air-passengers incubating the disease or by infected mosquitoes in the aircraft unless special precautions are taken. Anti-yellow fever precautions are carried out on the following lines —

(i) The provision of anti-amaryl aerodromes.
(ii) A campaign against *Aedes aegypti*.
(iii) Control or isolation of infected air passengers in yellow fever areas before embarkation.
(iv) Change of aircraft during journey to prevent direct transport of insects infected with yellow fever.
(v) Destruction of mosquitoes in aircraft.
(vi) Protective inoculation.

(i) It is desired to create *anti-amaryl aerodromes* in all yellow fever and suspected yellow fever districts, such aerodromes have been established at Kano and Malakal. Khartoum being a junction and clearing place for air-traffic is also an anti-amaryl aerodrome though not situated in a yellow fever district.

(ii) A *campaign of destruction* has been instituted against *A. aegypti* and other yellow fever species especially in anti-amaryl aerodromes and their vicinity. Since this campaign began the *A. aegypti* indices in many

places along the [illegible] Africa have markedly declined [illegible] West Africa

(iii) Intending [illegible] may be required by health authorities into *isolation* if [illegible] this has before embarkation In [illegible] seven days notice [illegible] flight is demanded so that it can be decided whether [illegible] proofed but is necessary before embarkation

(iv) A *change of aircraft* during journeys lessens the risk of [illegible] infected insects being transported beyond a certain point Long [illegible] operate between West Africa and Khartoum here other planes [illegible] the journey to East or South Africa or to Egypt where another [illegible] is made at Alexandria before travelling on to India

(v) The *destruction of mosquitoes in an aircraft* has occupied the thoughts of many public health experts and aircraft constructors in various countries during recent years Difficulties as regards the type of spray and insecticide to be used have had to be overcome First the ordinary "Flit" gun was used but proved of little practical value, as the spray produced was neither sufficiently fine nor penetrating Pressure sprayers driven by petrol engine or electric motor, were found suitable for aerodrome work but were too heavy and cumbersome for use actually during flight which is the ideal method of disinfesting aircraft as it ensures destruction of insects before landing, as well as saving valuable time disinfestation should be done just before or after taking off and again from a quarter to half an hour before landing

Park Ross of South Africa suggested building tracheal ducts into aircraft so that insecticide could be diffused through all internal compartments but this idea was rejected mainly on account of the great increase of weight involved His visit to England in 1937, in connection with this matter however, brought to light the Lanmouth carbon dioxide sparklet method of diffusing insecticides under pressure in the form of a very fine spray, which could penetrate all corners of the compartment treated even behind curtains this result is attained by the pressure of carbon dioxide liberated by a sparklet bulb forcing the insecticide from a 50 c c metal container through fine copper tubing to jets in the compartment requiring to be treated This year an equally effective apparatus the Phantomyst Nebulizer (made by Andre (Components) Ltd) has been used for disinfesting aircraft by means of this apparatus which weighs only 17 lb and can be easily transported from one compartment to another, a dry and penetrating mist is formed by compressed air forcing the insecticide through fine jets to atomize it then on to high speed rotors where it is pulverized the machine is calibrated to disperse 1 c c of insecticide a minute and ten to fifteen minutes action is required for a compartment of about 500 cubic feet The sparklet ejector apparatus and the Phantomyst have been

widely experimented with by Imperial Airways, and for this purpose were fitted to their flying-boats *Cassiopeia* and *Cambria* on the Southampton Durban run the results have been most satisfactory A full report of these researches has been published recently by Mackie and Crabtree (1938) who stressed the necessity of placing the disinfesting apparatus in different positions in the compartments, depending on the normal continuous but slow flow of air currents from behind-forward in the aircraft, due to aerodynamic forces exerted on the outside of the machine In flying boats the sparklet ejector apparatus has been found most suitable for freight compartments and the Phantomyst Nebulizer most suitable for passenger compartments

The choice of suitable insecticides for aircraft work is of prime importance, for, as Mackie (1938) states it should be (*a*) Highly toxic to insects (*b*) innocuous to passengers (*c*) non inflammable, (*d*) non-corrosive and non staining (*e*) stable in all climates and readily miscible with water

Therefore, "Deskito which is a water-soluble pyrethrum concentrate, requiring to be diluted ten to fourteen times its volume with water immediately before use has been adopted by Imperial Airways, the dosages which have been found essential (acting for ten minutes) to kill all mosquitoes in aircraft are from 50 to 150 c c of 1 14 Deskito per 1,000 cubic feet of space for the ejector apparatus depending on the parts of the aircraft to be treated and 30 c c of 1 10 Deskito per 1 000 cubic feet for the Phantomyst Nebulizer Professor J W Munro recommends a 1 30 dilution of Deskito in water using 1o0 c c for each 1,000 cubic feet of space to be treated and allowing the insecticide to act for fifteen minutes

Pyrocide 20 is another very effective insecticide and is used widely in America Egypt and India, but as it contains a paraffin base which with repeated application gradually saturates the walls and furniture of the aircraft it so increases the risk of fire that it is considered inadvisable to use it

Recent investigations by the Pan-American Airways, reported on by Cumming (1938), suggest that the present method of disinfesting the interior of aircraft is inadequate, as infected mosquitoes and other insects can find safe harbourage in the space between the outer and inner linings of the aircraft, or in the hollow wings and can thus be transported to other aerodromes or forced landing grounds In addition he states that the exterior of the aircraft offers many hiding places for mosquitoes and instances the space which accommodates the retracted under-carriage, various grooves in the structure, and innumerable rivet holes It is felt, however, that air currents during flight will dislodge most of these insects, but should later experience confirm Cumming's views, steps will require to be taken to disinfect these remote spaces and crannies

As regards the prevalence of insects in the cabins of aircraft the incidence varies with the site of the aerodrome, especially whether it is on land or water and, in the latter case the distance from the shore, flying boats usually moor well out at a floating pontoon C B Symes found that of 52 aircraft arriving at Kisumu from the north, approximately 50 per cent harboured insects, including culicine and anopheline mosquitoes, muscidæ tabanidæ and chironomidæ the insect population in these aircraft would doubtless have been far greater but for the antimosquito measures practised at aerodromes From Kisumu south to Durban the local authorities have taken the additional precaution of trying to limit the entrance and exit of insects by hanging overlapping curtains impregnated with para-di-chlor benzine over the doorway of aircraft It would appear advisable to fit these curtains on all aircraft travelling over yellow fever districts, especially in view of the possibility of such aircraft using re-fuelling aerodromes which are mere clearings in the jungle, placed a reasonable distance from human habitations, and supposed to be kept Aedes free Incidentally, passengers are not permitted to embark at re fuelling aerodromes without a special health certificate from the local medical officer of health

(vi) *Protective inoculation with virus vaccine* has proved a most valuable preventive medicine measure against infection with yellow fever protection begins about a week after inoculation and is fully developed in 90 per cent of cases within three weeks persists apparently for about two years, and is equally effective against urban and jungle types of the disease Prior to 1937, the virus was given in conjunction with hyper immune human serum with the result that, in about 3 per cent of cases infective hepatitis occurred three to four months after inoculation at times the incidence was higher thus, in Egypt of 51 R A F personnel inoculated against yellow fever with immune human serum plus attenuated viscerotropic virus 7 men (i e 13 per cent) developed jaundice three to four months later whereas jaundice did not occur in any of the 996 R A F personnel living under identical conditions but not given this inoculation the blood sera of the jaundice cases following inoculation were tested and found to be free from yellow fever immune bodies in every instance During the past fifteen months however an attenuated pantropic virus grown on chick embryo minus its central nervous system has been used this virus has lost much of its viscerotropic and neurotropic properties yet it produces a high degree of immunity to yellow fever already 3 500 injections of it have been given in this country to people proceeding abroad and over 800 000 in Brazil without the occurrence of a single case of jaundice The assumption is therefore that the delayed hepatitis which occurred previously after inoculation with certain batches of yellow fever virus plus human immune serum was due to the virus of infective hepatitis being present in some batches of human sera, analogous to the hepatitis, at times

fatal in which half [illegible] inoculation with mouse brain and encephalitis [illegible] sera (Findlay and Maccallum (1937) and Laporte (1938)) This delay has not been observed in using only sufficient human serum to suspend the virus that [illegible] at each inoculation instead of about 40 c[illegible] per week. The probable power of this serum immunization is manifested in the fact that there has not been a case of yellow fever among [illegible] Europeans so inoculated [illegible] belonging to yellow fever zones whereas during the period there have been 10 cases of yellow fever among Europeans who were not so immunized. Moreover nowadays yellow fever does not occur among research workers in this field though before the introduction of protective inoculation many distinguished workers including Noguchi Stokes and Young contracted the disease and died

It is therefore imperative therefore for all those who intend to travel by air through yellow-fever districts to be inoculated with attenuated pantropic virus which gives them protection against infection and to facilitate their journey as those so protected are not held up in quarantine

The practical points concerning anti-yellow-fever inoculation are —

(*a*) The virus is issued solidified in ampoules which should be kept in a refrigerator in order to retain its [illegible] C

(*b*) When required for use 1 c.c. of cold sterile water is added to the ampoule to dissolve the virus. The solution is complete in one minute

(*c*) The inoculation needle must be cool and free of alcohol otherwise the virus may be killed

(*d*) The inoculation is given in the deltoid region at least fourteen days before the expected date of arrival in a yellow fever zone

(*e*) There may be a slight reaction about a week after the inoculation the symptoms being headache lassitude and [illegible] pyrexia (99·1°) which disappear in twenty-four hours and may be relieved with aspirin there are no ill effects such as jaundice

(*f*) A certificate of inoculation should be given in each instance as it may be required by the passenger in the journey

(*g*) It is advisable to have inoculated after a period of two years of further exposure to infection is likely

(*h*) In Aden selected [illegible] mosquito-proof net may be kept around an inoculated person for three days after the inoculation as the virus may be circulating in the blood but this precaution is not essential as the amount of circulating virus is so minute and the virus itself so attenuated that it is unlikely to infect *Ae. aegypti*

(*i*) Persons performing inoculations should be immunized

II — Air Navigation of Flying Personnel against Diseases peculiar to Flying

The safe piloting of aircraft under all conditions of weather especially in high [illegible] and taking off and during the performance of aerobatics at high speed necessitates that pilots should possess a high degree of physical fitness. In the Service all flying personnel—pilots observers air gunners photographers and wireless operators—should be alert in body and mind with good muscle tone and quick reaction time and should possess as well

accurate vision and a good sense of balance. For these [illegible] there is a continual endeavour on the part of the medical branch [illegible] in close co-operation with aircraft constructors and various [illegible] to improve any conditions of flying, whether connected with the aeroplane, flying equipment or man himself, which are proving detrimental to the well-being and efficiency of the personnel. In this connection there have been many problems to solve concerning glare, ocular fatigue, blacking-out, noise, excessive vestibular stimulation, oxygen want, mental and physical fatigue and air-sickness.

Glare.

As regards affections of the eyes due to flying, the problems of counteracting glare, the ocular fatigue of night and blind flying, and blacking out, arise.

Glare is specially liable to affect the eyes of aviators when engaged in flying over clouds, desert or water also when flying towards the sun or when looking towards the sun in aerial warfare, real or mimic. Wing Commander P. C. Livingston from 1930 to 1938 has done much valuable research on glare and its prevention and as a result has been mainly responsible for the design and perfection of the present day flying goggles and glasses which give a full field of vision both in front and laterally as well as permitting binocular vision while landing—three were defects in previous designs. These goggles have been specially designed to fit and remain fixed at any speed to the flying helmet complete with oxygen mask and to allow of immediate and easy adjustment to any desired position as well as any width of nose. They are so constructed that triplex glass filters of various tints appropriate for day or night flying or suitable lenses for visual correction can be instantaneously slipped in as required while flying. In addition there is a dark visor which can be tilted into position in front of the goggles to enable the pilot to the or the air gunner to take aim if necessary direct towards the sun with the minimum of glare effect. The anti-glare value of these flying glasses has been highly spoken of by members of the long distance flights in Vickers-Wellesley bombers which took place to Egypt via the Persian Gulf, early this year and to Australia on last month's record-breaking flight. Recently glasses have been made containing splintered platinum or aluminium which by their high reflective power greatly decrease glare and heat from the sun and at the same time give improved visual definition.

Ocular fatigue occurs during night or blind flying and is due to the rapid to and fro movements of the eyes while observing the various instruments on the illuminated instrument board. This has been overcome by a practical placing and grouping of instruments so that those most frequently looked at are concentrated in the line of vision. In addition a

weak plus lens is provided for insertion in the flying goggles or glasses for magnifying purposes, and any individual refraction errors are corrected

Blacking out.—Another problem which concerns both ophthalmologist and physiologist is that of *blacking out*, a condition first encountered by aviators during the period of training for the Schneider Trophy race in 1929 at the time when aeroplanes had developed sufficient speed to produce centrifugal forces greater than 4 g while performing sharp turns It also occurs when an aeroplane is being pulled out from a steep

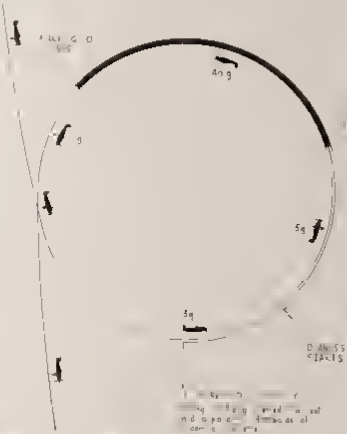


Fig. II.—Diagrammatic representation of the process of blacking out and turning during a steep dive and turn on aircraft at high speed

dive at high speed, the sharper the turn, provided the speed is kept constant the greater is the centrifugal force and its effect on the human body The onset of blacking-out is sudden but it does not occur immediately an excess over 4 g is applied as there is a period of delay lasting a variable number of seconds, depending on such factors as the amount of 'g' applied, the general physical and vasomotor tone of the person concerned, and the anticipation of or unpreparedness for the manœuvre performed (*see* diagram II)

The main effects of high 'g' on a healthy man are, first a [illegible] being forcibly pressed into the seat of the aeroplane, then of the abdominal contents being displaced downwards, this is quickly followed by a gradually increasing dimness of the whole visual field, then sudden blindness or blacking out occurs, but consciousness is retained except in highly susceptible persons such as those with poor cardiovascular tone The blacking out period lasts a varying length of time usually about two to five seconds, depending on the force and duration of the g applied it passes off as suddenly as it occurs while the loop or turn is being completed at a force less than 4 g There may be a certain lack of mental concentration for a few hours subsequent to a blacking-out but in the trained and fit pilot blacking out does not occur readily and after-effects are not evident The great danger of blacking-out is the momentary loss of control of the machine, which is liable to cause a collision with a neighbouring aeroplane during formation flying and tactics which are the order of the day

To prevent or ameliorate this condition it is first necessary to understand the cause In this connection a considerable amount of research work has already been done, especially in Germany and more recently in this country by Wing Commander H W Cornor and Flight Lieutenants J B Wallace and D J Dawson in high speed aircraft From these researches it would appear that the centrifugal force, acting from head to feet, causes most of the blood to flow in that direction producing splanchnic pooling and increased volume of the lower limbs as demonstrated by means of X-rays on monkeys by Fischer (1937) Thus, the head and heart are drained of much blood during the application of high 'g' leading to a fall of the systolic blood pressure as shown by Ruff (1938) in Germany by means of a centrifuge and by Cornor (1938) in this country, in high-speed aircraft This lowering of the blood pressure reduces the pressure in the central artery of the retina which is normally about half that in the brachial artery (Magitot and Boulhart, 1922), to such a degree (Andina, 1937) that the balance between intra-ocular and vascular pressure is upset and as a consequence the circulation of blood in the central artery of the retina is stopped and thus causes complete blacking out of vision until the said balance is readjusted by the return of the normal blood pressure when the centrifugal force falls below 4 g At forces of less than 1 g the action of the carotid sinus reflex is sufficient apparently, to prevent the blood pressure falling low enough to cause blacking-out, as shown on dogs by Koenen and Ranke (1937)

Preventive measures were introduced first by the personal experience of pilots who found that a certain amount of relief was to be obtained by yelling loudly during a steep turn or sharp pull out so as to contract the muscles of the abdominal wall and raise the diaphragm Thus procedure

bring [illegible] tons of [illegible] powder (1920), who advocated that [illegible] themselves [illegible] fit and practise exercises to develop [illegible] abdominal wall. All flying personnel should keep [illegible] is a simple and effective means of lessening the ill effects of [illegible]. The natural sequence of thought led to the trial of various types of belt to give increased support to the abdominal wall and so lessen splanchnic pooling. Flack (1920) provided members of the British Schneider Trophy team with a simple elastic belt but this was soon abandoned as being useless. Group Captain G. S. Marshall (1933) suggested the use of a safety belt fitted with a spring-loaded scoop to inflate the belt with air under pressure at high g, but its production has been delayed. More recently Flight Lieutenant J. B. Wallace carried out several experiments at North Weald in 1937 and 1938 with a specially designed abdominal belt fitted with a pneumatic bag to increase the pressure on the abdomen and he found that it helped to prevent or delay the onset of blacking out up to a force of 6 g in some individuals, whereas Ruff and others in Germany did not consider that abdominal belts were very successful in counteracting the centrifugal movement of blood to the lower part of the body. Instead, he suggested a form of folding seat designed as to bring the bodies of pilot or crew into a crouching position so that the chest is pressed horizontally against the upper thighs and the lower legs are drawn in under the thighs as was recommended by von Diringshofen (1934 and 1936), at one time a German war pilot, after he had shown the benefit of this crouching attitude with regard to the higher endurance of powerful centrifugal forces. This procedure materially reduces the difference in height between brain and heart and so alters the axis of the body exposed to the centrifugal force that a sufficient blood volume is retained in the head and heart to prevent the [illegible] of black out. Wing Commander P. C. Livingston has suggested that the seat should be provided with an oleo fitting so that the [illegible] could be dispelled by the seat sinking away as the gravity [illegible] increases and thus by neutralizing the effect of 1 or 2 g in this manner the effects might be felt as the result of a 5 g manœuvre. Flight Lieutenant J. B. Wallace (1938) proved that the administration of oxygen does not delay or prevent the onset of blacking out while Ruff and others showed that the administration of carbon dioxide raised the limit [illegible] to centrifugalization.

[illegible] of mild degree is found occasionally in aviators who [illegible] difficulty in seeing in the dark but have a delayed visual [illegible] when looking from a lighted area into the dark for example [illegible] the illuminated cockpit to outer darkness or landing at night. [illegible] Squadron Leader J. C. Neely is at present investigating this [illegible] with special reference to its incidence among flying personnel and

[illegible] institution [illegible] examination of the [illegible] Medal in 1935. Mr Lin and Harris [illegible] Haine [illegible]

A [illegible] solution has been found very useful [illegible] during the [illegible] long flights.

Hearing

Noise in aeroplanes is mainly derived from [illegible] exhaust [illegible] crankshaft and propeller and from [illegible] The latter is greatest near the engine and is radiated [illegible] through walls floor and roof but in a [illegible] degree. Hence [illegible] below the front windows and noise is heard in the [illegible]

The effect of noise on man depends on its level on the [illegible] Sounds between 80 and 90 decibels are disturbing, the [illegible] individual sensitivity, whereas sounds above [illegible] the more so as the scale is ascended and [illegible] above 120 [illegible] produce the feeling of pain. Continued exposure of the [illegible] to sounds above 80 decibels will eventually lead to [illegible] deafness such deafness would be [illegible] and leading to [illegible] attributability except that all Service pilots are provided with special pads to exclude noise the ones between [illegible] each individual [illegible] Service machines. The progressive deterioration of auditory acuity in pilots who have flown over a hundred hours without wearing ear pads has been demonstrated by Wing Commander [illegible] D Dickson (1938). Noise also leads to fatigue.

Examples of sound values

80 to 90 decibels. Police whistle at [illegible] ft; motor-horn at 23 ft; fire-siren at 75 ft.

90 to 100 decibels. Pneumatic drill at 10 ft; newspaper press room; [illegible] cabin of aeroplane not soundproofed.

100 to 110 decibels. Boiler shop while the steam engine; steel riveting machine at 75 ft.

110 to 120 decibels (this is the threshold of painful feeling). Thunder (overhead); heavy gun fire (close proximity to); [illegible] aircraft aeroplane engine (close proximity to).

In the non-sound-proofed cabin of the [illegible] there is noise between 90 and 100 decibels in intensity. Aeroplane constructors both in Europe and America including Dryden (1930), Spaun, Loye and Templin (1936) have set mind the problem of the reduction of aeroplane noise and vibration and as a result of the insulation of walls against sound and the provision of internal surfaces that give good sound absorption, noise has been so decreased that conversation in an airliner of to-day is as easy as in a modern train.

In Service machines it is not practicable to reduce noise in this manner.

owing to the question of weight Instead special ear pads are provided as part of the flying helmet at any rate for pilot, navigator and wireless operator whereas other occupants of the plane, e g personnel being transported in troop-carriers, usually just plug the external auditory meatus with cotton wool This latter procedure does not prevent the conduction of a certain amount of noise both by air and by bone conduction the wearing of a flying helmet if strapped under the chin lessens this conduction

Telephony between pilots and other members of crews in Service aircraft raises another problem of preventive medicine The constant presence of a microphone in front of the mouth is annoying and therefore helps to hasten the onset of fatigue Conduction of voice sounds by means of a microphone fixed either over the larynx or sternum has been tried but so far the results have been poor owing to distortion of voice sounds and absence of labial sounds

Wing Commander E D D Dickson is at present working in conjunction with Dr A W G Ewing of Victoria University Manchester, and the Air Ministry Research Staff at Farnborough, to eliminate the effect of aeroplane noise on the ear and to perfect, if practicable voice transmission and reception by bone conduction by means of a moving-coil microphone fitted over the sternum and an oscillator applied to the region of the mastoid process or over the brow while the external auditory meati are occluded

Middle ear deafness and excessive vestibular stimulation have also to be guarded against while flying During steep and long ascents and descents the balance of air pressure on the two sides of the tympanic membrane is so affected especially by very rapid descents that it is necessary to open the Eustachian tubes frequently by swallowing, aided perhaps by chewing gum, or forced blowing against the closed nostrils so as to readjust the pressure to that of the atmosphere otherwise tinnitus aurium deafness pain in the ears or vertigo result Flying personnel should not be permitted to fly while suffering from cold in the head owing to the danger of mucus or swollen mucous membrane occluding the Eustachian tubes and thus preventing the normal adjustment of the intra- and extra tympanic pressures Rapid descents while there is obstruction of one or both Eustachian tubes will either cause rupture of the ear drum or excessive vestibular stimulation, leading to vertigo and vomiting with the possibility of serious consequences

Respiration

Oxygen want or anoxæmia in altitude flying has been dealt with in considerable detail by various medical officers who served in the R A F during the Great War, namely by Birley Dreyer, Corbett, Barrett Flack

and Heald (1918) and their articles were revised and published in the Medical Research Council's Special Report Series No. 53 in 1920. Group Captain G. S. Marshall (1933 and 1937) has brought the subject up to date in connection with modern high altitude flying. It has been proved that in the fit individual, as far as aviation is concerned, symptoms of oxygen want such as dulling of the judgment and intellect, unwarranted sense of well being and security, delayed reaction time, dyspnoea and muscle weakness, do not usually occur until the height of 15 000 ft. has been reached and then only after the occupants of the aircraft have been at that height for about half an hour, though the time period varies greatly with apparently normal persons; of course the symptoms occur much quicker if moderate exercise such as air gunnery, is indulged in. Experiments in the decompression chamber have confirmed experience in the air and have shown that at 20,000 to 25 000 ft. without oxygen definite respiratory distress occurs rapidly as the result of such movements as operating a machine gun. Heights above 30 000 ft. cannot be attained without the use of oxygen as unconsciousness and death would quickly occur, owing to the low percentage of oxygen in the blood and tissues.

TABLE II

Height above sea level (feet)	Partial pressure of oxygen in dry and moist air (mm. of Hg)		Partial pressure of oxygen in alveolar air (mm. of Hg)	Oxygen saturation of the blood in arterial system (per cent.)
	Dry	Moist		
0	160	151	98	96
18 000	90	81	50	82
20 000	73	64	36	68
25 000	53	45	30*	56*
30 000	47	38	pressure at this altitude is insufficient to support life	

* Presumed figures.

R.A.F. personnel are not permitted to fly at heights above 16 000 ft. without the use of oxygen as man's mental and physical output is definitely reduced at this height and correspondingly more so as greater heights are attained. Even at much lower altitudes during long flights such as patrols the administration of oxygen diminishes or abolishes the fatigue or staleness and increases the mental alertness and muscular vigour of the aviator, as was shown by Flack and Heald (1917 and published 1918). These important facts should be impressed on flying personnel, especially in war time, when the keenest judgment is needed on all occasions.

The present policy is to supply an increased percentage of oxygen in the inspired air for flights at heights between 16 000 and 30 000 ft., and for this purpose oxygen masks are fitted to all Service flying helmets and connected by suitable tubing to an oxygen cylinder so that each individual can turn on his oxygen supply as required; the oxygen flows constantly

and mixes with inspired air in the mask, two-thirds being [illegible] inspiration occupies only one-third of the respiratory cycle [illegible] research is now being planned to improve, if practicable, the [illegible] wasteful method of giving oxygen. For altitude flying above [illegible] it is usual to supply pure oxygen under a pressure of 130 mm. of [illegible] to an individual enclosed in an airtight pressure suit somewhat [illegible] that of a diver (Marshall 1933), in this manner Flight Lieutenant M. J. Adams in June 1937, reached an altitude of 54,000 ft., a record only recently broken by the Italian, Colonel Pezzi, when he reached 56,000 ft. in October 1938.

Fatigue

Fatigue in aircraft crews, leading to diminished work performance, was dealt with by Air Commodore A. V. L. Richardson (1935) in his presidential address to this Section. He drew attention to the nervous exhaustion resulting from the cumulative effects of daily fatigue which causes a continual drain of nervous energy, so that day after day the individual becomes less refreshed by sleep and less fitted for work; this is apt to lead to psychological trouble. As regards aviation there are various factors at work in causing fatigue, such as the stress of taking off and landing at high speed, the mental anxiety of night flying or flying through cloud and fog, the discomfort of a confined and cramped position, vitality lowered through cold and draughts, the effect of noise on the auditory nerve, anoxæmia at higher altitudes and the injurious effects of carbon monoxide if fumes enter the cockpit or cabin.

Preventive measures to combat these fatigue-producing factors have been conducted along the following lines. Robot-pilots, artificial horizon, aerial compass and wireless have done much to simplify night and blind flying. Attention to the design and positioning of seats has overcome cramping, especially in civil passenger aeroplanes. Air-conditioning of air liners has provided an agreeable temperature in the various compartments in all climates, without draught, owing to undesirable extra weight, this has not been found practicable in Service machines as yet, but for everyday flying in this country a special flying suit, consisting of a linen fabric outer cover, waterproofed inside and lined first with linen fabric then with wool, has been provided, together with a lambskin collar dyed nutria but free from phenylene diamine which is apt to cause dermatitis. In addition, there are flying boots and flying gloves, the latter consist of three glove layers, the inner of silk, the second of cotton, and the outer of leather, to suit varying temperature conditions and permit of adequate cleaning. Of equal importance is the provision at all squadrons of well ventilated drying rooms to ensure that flying kit is dry and warm before being put on. A so-called "thermally insulated" suit consisting of leather outside, lined with a heavy sheepskin inside, is issued for

conditions of extreme cold Sound proofing in air liners and the provision of special ear-pads in Service machines as already described have largely overcome the noise factor Oxygen is provided to counteract anoxæmia as already described Attention to the positioning of the exhaust has done much to overcome the fume nuisance though the occurrence of persistent headache not relieved by aspirin in closed machines on long flights, suggests the possibility of carbon monoxide poisoning in mild degree this requires further investigation

Digestion

Ballooning of the stomach or intestines due to expansion of the contained gases tends to occur at high altitudes especially in those who have lax abdominal walls and suffer from fermentative indigestion this is increased by a too liberal carbohydrate diet The ballooning may seriously embarrass the heart and respiration Relief may be obtained by proper dieting before flights and by the administration of hydrochloric acid mixture during meals to aid digestion as the hydrochloric acid content of the gastric juices is often low in such cases

Diet of persons on long distance flights has been experimented with chiefly by means of trial and error on the various long distance flights and one consisting mainly of carbohydrates has been found to be the most suitable as muscular movements and exercise during flight are very limited and the main requirements are to maintain bodily heat and energy, in fact as the flight progresses, especially in warm climates it is found that the appetite is materially decreased Table III shows a suitable flying ration for one person for a three days flight

TABLE III

Ite	Quant ty
Dried meat (e g pemmican or biltong)	1 lb
Sandwiches whol round	6 lb
Chocolate milk or plain	½ lb
Oranges (boiled fresh jui	1
Apples	6
Bananas	6
Dried dates	½ lb
Dried figs	½ lb
Dried raisins	½ lb
Sugar lump	½ lb
Sugar barley	½ lb
Chewing gum	½ lb
Coffee black unsweetened	1 gallon
Malted milk tablets	½ lb

In addition a bottle of glycerine mixture diluted 1 10 to rinse out mouth to lessen dryness

Water is provided on desert flights on the assumption that it may be required for a minimum period of three days in case of forced landings For this purpose water is carried on the scale of one gallon per man per

day that is taken in each water bottle, the water being stored in tanks and as already mentioned these tanks require special treatment in cholera infected areas.

In addition for detached aircraft on flights abroad, a small motor-filter complete with semi-rotary pump and 30 ft of tubing, weighing 23 lb in all is supplied together with sufficient bleach and ammonia to chloraminate the water filtered by means of this pump. For detached aerodromes a small motor driven plant for mechanically chloraminating water is provided the whole apparatus packs neatly into two cases, each case being 2 ft cube and weighing 140 lb, so that it can be readily transported by aeroplane motor car or motor boat the apparatus can be assembled for action within fifteen minutes and is capable of delivering 250 gallons of filtered sterilized water an hour. One or more collapsible sportspool tanks complete the equipment.

In *sickness*, like sea sickness is considered by most authorities to be due to the abnormal excitation of highly sensitive vestibules leading to vagosympathetic disturbance and hypertonus of the stomach as shown by Gwynne Maitland (1931) and Fleck (1931). Liability to this condition can be assessed in the medical room by the type of response to spinning in the Bárány chair. By repeated exposure to these abnormal stimuli the vestibule becomes adapted to them, as far as flying is concerned, at least in a certain number of cases. Wing Commander E. D. D. Dickson thinks that the adaptation rate is as high as 80 per cent. On these grounds it is intended, as a temporary measure, to accept a limited number of candidates who show varying degrees of air sickness and to send them to a particular flying training school, where they will receive a special course of training. There are other means of educating the vestibules to adapt themselves to aerobatics thus in Russia and Germany use is made of rotating wheels. In addition there are the usual aids for the bad sailor that is, drugs of the barbiturate group which act as sedatives on the nervous system and reduce muscle tone, including that of the stomach, but which unfortunately cause an uncomfortable dryness of the mouth. These remedies must of course be taken about half an hour before the intended flight and may require to be repeated during long flights.

As regards flying in warm climates, aluminium fabric sunproof blinds have been fitted in the roof of the cockpit of certain Vickers Wellesley bombers and have proved of practical value as a protection from the sun and at the present time the flying helmet is being reconstructed so that it can be used in two layers, a light inner webbing layer for use in the tropics and in closed-cabin aircraft over which can be worn a thick outer layer for use in open aircraft and under conditions of cold.

In conclusion I wish to express my deep gratitude to the Ministry of

Health, particularly to Drs. L. [illegible] H. G. Stock and M. J. [illegible] for their courtesy in inviting me to [illegible] departmental meetings [illegible] with aviation and general public health matters; to Imperial Airways especially to Colonels H. Birchall and F. P. Mackie for their ever-ready help, information, and co-operation on many occasions; and to the various R.A.F. medical officers who have permitted me to refer to their results, some of which have not been published as yet.

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THE THERAPEUTIC [illegible] PERIODONTAL DISEASE

By Surgeon Lieutenant [illegible]

Surgeon Lieutenant [illegible]

Introduction

It has long been known that a deprivation of vitamin C will bring on the condition of scurvy. It is also understood that the disease is now comparatively rare following on improved conditions of living with the advance of medical science. The clinical picture of hæmorrhagic purpura with swollen and bleeding gums in the vicinity of the teeth is not a common picture in our hospitals although these cases still occur sometimes rather unexpectedly in people whose condition of living on the surface appears to satisfy modern standards (Jennings and Glazebrook, 1938). This latter picture is the end result of a series of pathological changes, each of which will present its own clinical features, and in the early stages changes in the mucous membranes of the mouth are to be expected. The condition of gingivitis has been described by some as such a subscorbutic state and Kramer (1937) considers that the cause of inflammatory periodontal disease such as acute gingivo stomatitis and chronic gingivitis is not due to lack of dental hygiene but to lack of vitamin C.

Recently a trial was instituted of the prophylactic addition of synthetic vitamin C to the diet of the boys in a training establishment of the Royal Navy, and one of us (F.S.R.) having had much previous experience of gum lesions in adolescents and young adults associated with vitamin C deficiency, took this opportunity to observe the effect of ample intake of "Redoxon" brand ascorbic acid (Messrs. Roche Products Ltd.) upon gum and mouth lesions in these boys.

The investigations into the dietetic intake and urinary excretion of vitamin C by these boys is the subject of another paper. Briefly these investigations suggested that the optimum addition of vitamin C to the diet was in the neighbourhood of 50 mgm. per day per boy, bringing the total intake to a figure approaching 75 mgm. per day per boy. The addition was made in the form of pure ascorbic acid powder, 25 mgm. being added to cocoa taken in the morning and 25 mgm. to milk taken at night time, the milk being pasteurized. Titrations of milk and cocoa after the addition and twenty four-hourly estimations of urinary excretion showed that much of these additions reached the consumer, in spite of the heating of the cocoa. The boys under observation were at first saturated by the

administration of large doses—200 to 300 mgm. per day per boy. When saturation was being achieved, the dosage was reduced to a maintenance level of 50 mgm. per day per boy. Observations were taken on two groups of boys: (*a*) those who had been in the training establishment for some time and had been dentally treated while in the Service and (*b*) new recruits. The results of these observations are set out below.

(a) Boys Already Dentally Treated

In the first instance Group I, comprising approximately 800 boys, were saturated with vitamin C as described above and the condition of the mouth in these boys compared with a control group (Group II) of approximately 800 boys living under exactly the same conditions in every other respect but otherwise identical. The age of the boys averaged about 18 years and in both groups the boys had been in the Training Service for about the same length of time. The two groups were chosen independently by the medical and dental authorities undertaking the tests.

All the boys examined had at this time (November, 1948) spent many months in the Service and had undergone dental treatment to the extent of being made "Dentally Fit". Many had received revisional treatment so that oral sepsis was eliminated and conservancy work completed. Each boy had received instruction as to the use of the toothbrush with sound knowledge of oral hygiene and of the cases of gingivitis observed only those with an obvious cause, namely a dirty mouth, were of the typical marginal type. Some cases of chronic hyperplastic gingivitis where tags of tissue had formed between the interspaces of the teeth and where the gums had encroached upon the surface of the teeth, were also noted but in the majority of cases of this type the cause (calculus &c.) had been removed and healing had commenced, leaving bosses of firm scar tissue. Those failing to heal even after treatment were especially noted.

These types of gingivitis were however few compared with the lesion more often observed, which appeared to be without obvious cause and differed clinically in being a gingivo-stomatitis rather than a gingivitis. In these cases the gums were congested and spongy, the surfaces having a gelatinous feel. Bleeding did not occur on simple palpation but if one pierced with a probe the hæmorrhage was more copious than usual. The congestion was uniform from the gums into the sulci on to the buccal mucous membrane, extending backwards and involving the tonsils and the pharyngeal wall as far as the eye could see and in some cases the lips were of a deeper red suggesting an increased vascularity.

In all these cases vitamin C deficiency was found, using the "Test Dose" method of Abbasy and Harris (1937). On a dosage of 200 mg. per boy per day, saturation, as determined by urinary excretion, was not

achieved until twenty-two doses had been given. This would appear to indicate that the average deficiency of vitamin C was in the neighbourhood of 4 000 mg. per boy. It must be remembered however that not all the vitamin added to the milk and cocoa reached the consumer, and doubtless a proportion of the ingested dose was destroyed in the body or not absorbed.

The laboratory findings certainly showed however a marked deficiency and suggested that the cases were actually examples of subclinical scurvy and that the marked congestion noted in this gingivo-stomatitis was a probable result of an interference with a healthy cell life causing a fragility of the vessels and a defective growth of the tissues. This type of lesion should disappear on saturation with vitamin C and, as Group I were receiving ample vitamin C as compared with Group II, it was to be expected that in the former group gingivo stomatitis would be abolished, and possibly cases of gingivitis improved.

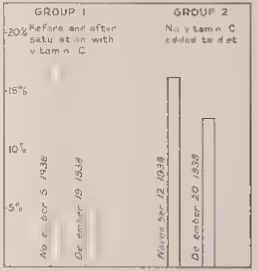


Fig. 1.—Incidence of gingivitis and gingivo-stomatitis in boys already dentally treated.

The total number of boys in each of the groups selected was not always available at the time of examination but the following figures were obtained.

On November 1 1938 350 boys of Group I were examined in daylight. 41 cases of gingivitis and gingivo-stomatitis were noted, a percentage of 11·1 per cent. Of these 44 cases, 34 were examples of gingivo stomatitis, 10 were cases of gingivitis due to a dirty mouth.

Administration of vitamin C was at once commenced as described above and the Group was re-examined on December 19 1938 under exactly similar conditions. 247 boys were inspected and only 12 cases of gingivitis were noted, a percentage of 4·9 per cent; and in all these cases

the gingivitis was of the marginal type [illegible] mouth It is interesting to note that the chronic hyperplastic case which had persisted in an inflamed condition after thorough local treatment, had healed leaving firm bosses of scar tissue No cases of gingivo-stomatitis were seen

On November 12 1938 the control Group were examined in daylight, and 46 cases of gingivitis and gingivo stomatitis were seen amongst 221 boys, a percentage of 14 3 per cent Re-examination on December 20, 1938 of 171 boys in this Group showed that 12 64 per cent had unhealthy gums, the majority being cases of gingivo stomatitis Unfortunately the numbers available for examination in the control group had been reduced but the percentage of gingivitis and gingivo stomatitis was still significantly high as compared with Group I where vitamin C had abolished a condition very suggestive of subclinical scurvy

Chart 1 illustrates these figures

(b) New Entrants

In January 1939 149 new recruits joined the establishment and a similar investigation was carried out on these boys 59 of the new recruits were posted to Group I of the previous term, and to ensure continuity and

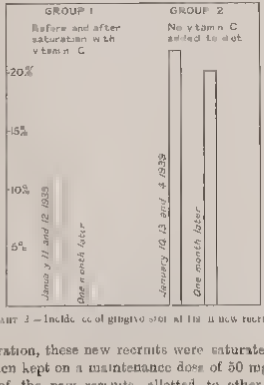


Chart 2 — Incidence of gingivo-stomatitis in new recruits

ease of administration, these new recruits were saturated with vitamin C as before, and then kept on a maintenance dose of 50 mgm daily per boy The remainder of the new recruits, allotted to other divisions of the

TABLE I.—59 NEW RECRUITS EXAMINED ON JANUARY 12, 1938, AND THEN SATURATED WITH VITAMIN C

Number	Condition on January 12	Condition after saturation with Vitamin C
1	Wigtown	General inflammation condition of gums and mouth unusual in recruits	Mouth now normal
2	Wingate	Marginal gingivitis. Tartar present. Does not use brush	Improved. Some marginal gingivitis still present
3	Hartlepool	Congestion of gums and mucous membranes. Gingivo-stomatitis. Tartar present. Several incisors loose	Mouth now normal
4	Newcastle	Marginal gingivitis. Foul mouth	Improved since cleaning teeth
5	Middlesbrough	Marginal gingivitis round upper incisors. Mouth breather. Hypoplasia	Much improved. Receding gums which are still irritated. No congestion now present
6	Tartan	Marginal gingivitis. Tartar present	No change. Is not cleaning teeth
7	Dunkeld	Marginal gingivitis	Much improved after cleaning teeth
8	Dunfermline	Congestion of gums with some hyperplasia. Spongy appearance. Gingivo-stomatitis	Mouth now normal
9	Newcastle	Hyperplasia with spongy gums and congestion. Gingivo-stomatitis	Mouth now normal
10	Perth	Marginal gingivitis	No change
11	Montrose	Congestion with hyperplasia. Spongy. Gingivo-stomatitis	Mouth now normal
12	Newcastle	Congestion and sponginess of gums. Bad mouth. Gingivo-stomatitis	Marked improvement. Mouth still dirty and has some marginal gingivitis present
13	Kirkcaldy	General congestion of gums with spongy ness. Does not use brush. Gingivo-stomatitis	Some improvement. Tissues escaped saturation with vitamin C owing to a dislike of roman. Subsequent saturation healed the condition

Summary

In January 1938

59 recruits examined	Percentage of marginal gingivitis	10·2 per cent
	Percentage of gingivo-stomatitis	11·8 per cent
	Total	— 22 per cent

One month later

59 recruits after saturation with vitamin C	Percentage of marginal gingivitis	8·5 per cent
	Percentage of gingivo-stomatitis	1·7 per cent*
	Total	10·2 per cent

* This represents one case only who escaped saturation with vitamin C owing to a dislike of roman. Subsequently saturation was achieved and the gums healed



TABLE II —

			of mouth once month
	Marginal gingivitis		
	Marginal gingivitis		
	Congested and spongy mouth dirty and offensive	Mouth cleared but no change in gum condition	
	Congested with enlarged papillæ filiform appearance and localised gingivo-stomatitis	No change	
	Marginal gingivitis	Daily mouth	No change
	Congested gums and mucous membrane Gums spongy Gingivo-stomatitis Teeth inaccessible	No change	
	Congestion along gingivo-stomatitis		No change
	Congestion hyperplasia Severe form of mouth gingivo-stomatitis		No change
	Hypertrophic Tartar present		Improved with

Summary

	Percentage of marginal gingivitis	15 per cent	
	Percentage of gingivo-stomatitis	22 2 per cent	
	Total		3
examined given	Percentage of marginal gingivitis	1 per cent	
	Percentage of gingivo-stomatitis	30 0 per cent	
	Total		27 7 per

cent were watched as a control Group Notes were taken at time of the examination of each case of gum disease found

Thus, while with ordinary routine dental treatments and cleaning marginal gingivitis has been much reduced the gingivo-stomatitis remains at practically the same level Chart 2 illustrates the difference in the incidance of the gingivo stomatitis in the two groups It is perhaps unfortunate that the control group had a far higher percentage of gingivo-stomatitis at the commencement than the vitamin C group the recruits are allotted to the various divisions indiscriminately and neither the Medical nor Dental Authorities control their distribution It will be seen, however, that the gingivo stomatitis has been abolished in the vitamin C group with the exception of one case who escaped saturation

Discussion

From a study of these results there can be little doubt that the condition of marginal gingivitis is due to accumulation of food debris and tartar deposit associated with lack of oral hygiene and that improvement in personal cleanliness and routine dental treatment will in the majority of cases lead to a cure The most energetic measures of this type

however, fail to cause any change in the commonest lesion observed amongst these boys which is a gingivo-stomatitis closely associated with hypovitaminosis C; for investigations upon actual cases have in every instance shown a deficiency in this factor, and estimation with ascorbic acid has never failed to effect a cure. Boys in the control group with gingivo stomatitis were subsequently treated with vitamin C, and usually within 14 days a characteristic colour change was observed, the gums losing their deep red, almost maroon colour the tissues becoming firmer and assuming their normal pink appearance.

Kramer (1937) investigated 34 cases of gingivitis and stomatitis for vitamin C deficiency according to the method of Jeziar and Niederberger (1936). A deficiency varying from 2·000 to 2·500 mgm. was observed in each case and treatment with Redoxon (Roche Products) effected a cure in each case except one. He was particularly impressed by a general improvement in general health which followed saturation not only did the gums become firmer and the haemorrhage cease but symptoms such as lassitude anorexia and rheumatic pains in the limbs also cleared up. Altogether he found that 20% of the army personnel suffered from C hypovitaminosis and that the incidence of prescorbutic conditions such as lassitude and pains in the limbs was higher during the winter months a finding which supports the observation that exposure to damp and cold accelerates the development of scurvy in subclinical cases, and is the reason why scurvy was once thought to be due to exposure as rheumatism is to-day by some.

No cases were observed of haemorrhage from the gums amongst these boys but symptoms such as lassitude and "rheumatic growing pains" were quite common and positive tourniquet tests were obtained in some. The pains disappeared usually on saturation. The group receiving the vitamin volunteered the information that their appetites had improved, and that they slept better.

This association of gingivitis and rheumatic pains is of great interest. The relation of dental pathology to the adult type of chronic rheumatism has long been recognized and a deficiency gingivo-stomatitis such as is described above must predispose to dental sepsis and decay in later years. As already noted, the mucosal congestion in these cases usually extended backwards involving the tonsils and the upper part of the pharynx and it is to be expected that an unhealthy mucosa would fall an easy prey to streptococcal infection. The 'growing pains' associated with vitamin C deficiency occur in and around the larger joints such as the ankle shoulder but more commonly the knee. They tend to become worse as the day wears on, and are more noticeable in certain actions such as climbing stairs. At night time they disappear and are usually not present on waking in the morning. In these cases sedimentation rates are normal.

[illegible] similar symptoms may be complicated [illegible] evidence of infection, such as an increased [illegible] sedimentation rate [illegible] in these cases the pains appear to be more [illegible] and may occur at night Cases of this nature may later develop [illegible] fever with tric uthritis or carditis may develop "silently [illegible] further manifestations of rheumatism It is often impossible [illegible] to distinguish from the description of the symptoms by the patient a case [illegible] will clear up on saturation with vitamin C from one which will [illegible] to rheumatism and carditis Clinical examination may [illegible] the sedimentation rate helps us to come to a decision but [illegible] it is not infallible

[illegible] the above considerations in mind it is interesting to discover [illegible] cent of the cases of gingivitis were recruited from Tyneside [illegible] district whereas of the total number of recruits only [illegible] came from this area On conducting a similar investigation [illegible] of rheumatic fever we were not surprised to find that by far [illegible] incidence of rheumatism fell upon recruits from the Tyneside [illegible] is considered fully in another paper, and we do not wish to [illegible] it at length here, but it is well known that economic conditions [illegible] are below the standard for the country as a whole and it is [illegible] that dietetic deficiencies have existed amongst many of the [illegible] in this area since birth

Summary

[illegible] vantage has been taken of a trial of the addition of vitamin C to the [illegible] of boys in a training establishment of the Royal Navy to observe the [illegible] of saturation upon gum lesions The commonest lesion observed [illegible] stomatitis was abolished by the use of the vitamin The most [illegible] treatment of recruits leaves a residuum of gum disease in those [illegible] saturated with ascorbic acid Marginal gingivitis on the other hand [illegible] responds to simple hygienic measures The incidence of gingivitis [illegible] more heavily on Tyneside recruits, and these recruits were more prone [illegible] develop rheumatic fever

We are greatly indebted to Surgeon Captain Vickery O B E R N [illegible] his help and encouragement in the initial stages of this work We [illegible] express our thanks to Messrs Roche Products, Ltd for generous [illegible] of ascorbic acid, Redoxon ' brand which has rendered this trial [illegible]

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THE DIAGNOSIS AND TREATMENT OF INGUINAL BUBOES

By Surgeon [illegible] and [illegible]

The question of the [illegible] one which presents certain [illegible] who may be stationed in tropical and subtropical stations [illegible] may be due to infection with syphilis, Ducrey's bacillus, Virus [illegible] or the virus of lymphogranuloma inguinale. In many cases [illegible] of the condition is extremely difficult, as is shown in a recent publication by W. J. Forbes-Guild [6] dealing with lymphogranuloma inguinale in the West Indies.

When I took charge of the V.D. ward at the Royal Naval Hospital, Cape, I expected a rich harvest of buboes due to lymphogranuloma inguinale infection. As the West Coast of Africa is now recognized as the classical habitat of lymphogranuloma inguinale, where it has long been known as climatic bubo and as the presence of this disease in the Cape has recently been established by Purcell and Dunlayson (1930) [10] such an expectation would appear to be justified.

The present paper details a list of cases of inguinal buboes occurring at the Royal Naval Hospital, Cape, during the years 1937 and 1938, and is presented in the hope that it may prove useful to other medical officers throughout the Service who are confronted with similar problems.

Methods

Diagnostic

The Frei-Hoffmann Test.—A fine bore needle was introduced into the skin and enough antigen injected to raise a white bleb about 1 cm. in diameter showing pearl-orange indentations. I found it difficult to be sure I had injected exactly 0·1 c.c. of antigen and a mean of something between 0·1 and 0·2 c.c., being guided more by the size of the bleb raised than by the calibration on the syringe. A similar technique was employed with the control using sterile normal saline. All the Frei-Hoffmann antigen used in my cases was obtained from the Union Government Biological Control Laboratories. Its method of preparation was described in a paper by Dunlayson and Purcell [5]. The following is a quotation from their paper:—

"In carrying out the present survey advantage was taken of a supply of Frei antigen obtained from Germany, by means of which four cases of lymphogranuloma infection in an active stage were diagnosed. In this

suppurating glands were prepared from pus aspirated from the bubo in each of the four cases. The patients in each case were Wassermann negative, gave a negative Ito Reenstierna reaction, and showed no signs of syphilis or gonorrhœa. In each case the diagnosis of lymphogranuloma inguinale was confirmed by inoculation of mice and guinea-pigs.

The aspirated pus was examined for the presence of aerobic and anaerobic bacteria. The pus from each of the four cases was found to be sterile.

'Frei antigen was prepared by mixing one volume of pus with five volumes of sterile saline. Hardglass (Fiolax) ampoules, each containing 1 c.c. of the mixture, were heated at 60° C. for one hour.

'Two patients, from whom pus had been obtained, were inoculated intradermally with each of the four samples of Frei antigen prepared as described above, and also with Frei antigen obtained from Germany.

The freshly prepared antigens produced more marked reactions than the antigens obtained from Germany.

'The Frei antigens were further injected intradermally into a person infected with Ducrey's bacillus, who showed a strongly positive Ito Reenstierna reaction. No reaction was observed with any of the Frei antigens in this case.

The Dmelcos Skin Reaction (Modified Ito Reenstierna) [20].—The antigen used was *Bacillus ulceris cancrosi* (Ducrey) prepared by May and Baker in 15 c.c. rubber capped bottles, advertised to be for purposes of intravenous injection. This we had to hand, and I did not consider it necessary to procure the more expensive double strength preparation made up in ampoules as the wastage would have been considerable. If this intracutaneous reaction was to be of any degree of sensitivity it could not be of any great moment whether, by injecting 0·2 c.c. one's dose was forty-five millions or ninety millions. The technique employed was the same as that of the Frei-Hoffmann test.

The Wassermann Reaction.—This test was carried out at the Government Pathological Laboratory in Capetown. The blood was taken on Mondays, allowed to stand overnight, centrifugalized next morning, the serum being sent up to Capetown by post, thus eliminating the possibility of traumatic hæmolysis.

Gland Puncture.—This was occasionally employed when the sore was suspiciously Hunterian in type and yet failed to yield the *Spirochæta pallida*. It was regretted later that resort had not been had to this test more often, for when it was successful the *S. pallida* were present in very large numbers, and the method gave the impression of being reliable. The method used was to inject into the gland, through locally anæsthetized skin, sterile normal saline in amounts from 1 to 2 c.c. depending on the size of the gland. The gland was then massaged round the needle which

with [illegible] The needle was left in situ for at least five minutes. Fluid was finally aspirated and the least blood-stained drop selected for examination by dark ground illumination.

Direct Smear for Ducrey's Bacillus (Hæmophilus Ducreyi).—Necrotic material is obtained where available from the base of the sore, spread on a slide, fixed and stained for one minute with thionin blue. Once one has familiarized oneself with the appearance of the organism it is unmistakable. It is described in Muir's [10] Bacteriological Atlas, 1937, as a Gram-negative rod-shaped bacillus 1·5 × 0·5 in size, frequently constricted in the middle. It may appear singly in pairs, in small groups or in chains. The polar staining visible at times, gives the effect of a clear space in the middle of the bacillus. Long chain formation is seldom seen except in cultures.

Therapeutic

Routine Anti-Syphilitic Treatment.—The procedure adopted in a fresh case was to give one intravenous injection of N A B 0·3 gram, two of 0·45 gram, two of 0·6 gram, and five of 0·75 gram, totalling in all 6·15 gram. These were given at four day intervals. Concurrently with this bismoxyl (2 to 3 c.c.) was given intramuscularly at weekly intervals.

Except in one instance of multiple peripheral neuritis all cases were then fit to return to duty. They were recommended for intramuscular bismol injections at fourteen day intervals for three months, and then for a course of N A B similar to the first, except that it was given at weekly intervals. This kept the patient under continuous treatment for approximately twenty-nine weeks. Subsequently two further courses of the same amount of N A B were given (whenever possible) with a break of three months free of treatment. Bismoxyl was given concurrently with each course. In all, 24·6 gram of arsenicals were considered sufficient, provided the case was consistently sero-negative after the completion of the first course.

Intravenous Dmelcos Vaccine Therapy.—The same vaccine as that used for the intra-cuti test was employed (225 millions per 1 c.c.). The first injection was 0·5 c.c. and the subsequent ones increased by 0·5 c.c. each time. An interval of three days was allowed between injections. Usually the first reaction was prolonged, lasting about forty-eight hours, but after that reactions were sharp and of less than twelve hours' duration.

Intravenous Intimony Tartrate Therapy.—W. J. Forbes-Gould's recommendations [6] were followed as closely as possible, and are given in detail in the case histories concerned.

CASE HISTORIES.

Case 1.—T. W. C. Stoker Petty Officer, aged 37. (1) Chancroid. (2) Bubo, right.

This case was taken over by the writer after the patient had been twenty-two days in hospital. The case history was as follows:—

On February 20, 1937, the patient reported sick in his ship with a chancroid, also

[illegible] March [illegible] 1937. [illegible] The next day pus escaped [illegible]

[illegible] 1937 [illegible] hospital.

[illegible] small [illegible] the inguinal [illegible] There [illegible] a furred and dirty tongue [illegible] negative [illegible] The [illegible] disease and proved negative [illegible] the gland mass [illegible] Poupart's ligament and by [illegible] packed with iodoform gauze and [illegible] sulphate fomentation [illegible] headache [illegible]

[illegible] following [illegible] iodoform [illegible] per cent [illegible] of the wound were [illegible]

[illegible] hospital the total [illegible]

[illegible] right [illegible]

[illegible] The [illegible] Wassermann [illegible]

[illegible] the blood should have been further [illegible] The Wassermann [illegible]

[illegible] syphilis.

[illegible] Eighteen days after [illegible] the left groin which became progressively [illegible] admitted to hospital. On admission [illegible] the left side of the penis. Although [illegible]

... thought from the ... the tissues that ... Illustration type. In the ... there was a swelling ... th, under the skin ... glands hung small ... Above ... There was ... There was no ... No ... three successive ... by ... solution ... vation of ... Dan Hoffin ... by ... of the trunk ... by ... by ... The rash ... elsewhere ... by ... The ... of the ... the left parotid ... The ... to ... the ... the ... the

ligament [illegible] inguinal abscess began to track [illegible] towards the [illegible] which [illegible] to point on the forty-seventh [illegible] A puncture was performed [illegible] the [illegible] portion of the abscess discharging [illegible] through the [illegible] [illegible] drawn. It though it was thought that the abscess would [illegible] for [illegible] the abscess pointed and burst in the [illegible] region [illegible] the [illegible] was expressed and the sinuses [illegible] with gauze and collodion [illegible] the discharge leaked slowly.

[illegible] day two small lateral abscesses had developed but these subsided at the [illegible] and the patient was discharged from hospital after eighty-one days with [illegible] but dark brown local pigmentation of the skin. The patient's [illegible] loss of weight had been 18 lb. He had had a slight evening rise of temperature [illegible] 99.4° F.) during the first six weeks in hospital and [illegible] kept [illegible] third day.

The total [illegible] antimony tartrate administered [illegible] intravenously, the maximum dose [illegible]. The dose was reduced to 1 grain on one occasion because the patient complained of muscular pain in the shoulder [illegible] the side of the first recent injection. It is worthy of note too that the patient always complained of pain in the [illegible] groin during the evening of the day of injection and the subsequent day. More [illegible] the inguinal swelling increased in size and [illegible] more tender.

Remarks.—Without in any way wishing to decry the paper published by W. J. [illegible] [illegible] in the JOURNAL OF THE ROYAL NAVAL MEDICAL SERVICE in April 1937, I [illegible] it was that paper that stimulated me to [illegible] his conclusions in my case that came [illegible] in this instance the [illegible] under my care before there were signs of the lesion in the inguinal swelling [illegible] four days after it was first noticed. Treatment with intravenous antimony [illegible] was begun [illegible] on the fourth day. [illegible] recommends [illegible] I gave only [illegible] antimony tartrate [illegible] by [illegible] I intended to work up to a larger dosage [illegible] showed signs [illegible] in the lesion in the groin and in the [illegible] injection. Another patient [illegible] I was treating [illegible] showed no more marked reaction so that I withheld larger dosage [illegible] the difference between [illegible] does not seem to [illegible] results. My patient was eighty-one days in hospital [illegible] The bubo [illegible] aspirated [illegible] lymphogranuloma [illegible] Case 2 which I am about to describe was under treatment [illegible] and I [illegible] obtained none of [illegible] results.

[illegible] Stoker, aged [illegible] lymphogranuloma inguinale.

[illegible] admitted to hospital on April 24, 1937. He had been [illegible] for the past [illegible] days for a swelling in the left groin. [illegible] days [illegible] to hospital recourse had to be had to treatment [illegible] 101° F.

[illegible] the patient alleges was that he had had intercourse with [illegible] coloured [illegible] on March 24, and used the Service prophylactic outfit. The [illegible] thirteen days. A small lump appeared in the left groin [illegible] It gave rise to no symptoms until [illegible] painful and tender. The next day he was feverish and suffered [illegible] general [illegible] lesion had been found by his medical officer.

His past history showed a record of chicken-pox in 1924, [illegible] in 1926, [illegible] 1933, and the last entry was syphilis in 1931. Of the syphilis he was [illegible] He had received a total of N.A.B. 18 grm., N.A.B. 4·26 grm. and [illegible] and the Wassermann reaction was doubtful.

His condition on admission to hospital was as follows: He was a man of slight build, weighing [illegible] pallid complexion, but looking fairly well and he was apyrexial. There was a [illegible] of multiple enlarged glands in the left inguinal region, some above the line of Poupart's ligament, some below. Much deep brawny induration was present extending upwards to the abdominal wall. The mass measured 4 by 3 in. There was redness of [illegible] No other glands were palpable and the spleen was of normal [illegible] A careful [illegible] focus of origin. The other systems were normal.



[illegible] The head-cut had consisted of one initial course [illegible] (total [illegible] short second course later in 1849 (total N A B 1 6" [illegible]). He had [illegible] higher mercurial liniment. Blood-vessels up to 1884 [illegible] incidently [illegible] that it was suspended with a recommendation for [illegible] operations [illegible] in C S L [illegible] sex mouths, which apparently was [illegible]. The [illegible] had also [illegible] with [illegible]. Recently [illegible] antiseptic [illegible] left with the patient had suffered from a severe [illegible] [illegible] [illegible] right middle [illegible] the head of the [illegible] Sixteen [illegible] to Hospital he developed a large irregular sore on the [illegible] [illegible] [illegible]. The [illegible] adenitis [illegible] to [illegible] [illegible] [illegible] [illegible] hypertrophied [illegible] [illegible] [illegible] [illegible]

[illegible]

[illegible]

[illegible]





1918. [illegible] February exposure to gonorrhœa during his period of duty so that [illegible] under the medical care of the writer in the Lees Convalescent [illegible] Hospital. The S.P. test was found more negative [illegible] On admission he had the mucoid purulent discharge in the morning. No expressed [illegible] urethra. Urine very turbid. A coronal sore showing deep basal induration [illegible] inguinal glands in chancroidal order and shotty glands in both [illegible] groins.

[illegible] of the gonorrhœa was soon quite small and was treated entirely [illegible] The [illegible] however became larger and more pronounced—dark buboes [illegible] attaining a maximum size of 3 in. by 2 in. on the left and 1 in. [illegible] right. After week in hospital he was running a temperature [illegible] 101° F. for nine days before it began to subside. During that time [illegible] which it still was thought that they were secondarily infected [illegible] broke into the glands each bearing beneath its blistered lip [illegible] Slough-forming and extra-cellular gonococci. Six tests by precipitin [illegible] Guinea-pig dead and bursting days after bubo sore. *Syphilis* found [illegible] the fourth day in hospital negative on the day subsequently after [illegible] reaction on the eighth day negative. Two Hoffmann intracutaneous [illegible] repeated on the fifteenth day negative.

[illegible] reaction on subsequent treatment and the total days illness was [illegible]

[illegible] aged 21. (1) Gonorrhœa (2) bubo right [illegible]

[illegible] admitted March 22 1918 having already been in bed two days [illegible] This had supervened upon acute gonorrhœa for which he [illegible] had been six days prior to admission. Coitus took place in Capetown [illegible] the incubation period being for the gonorrhœa seven days for the [illegible] Then was ill training of the left great to [illegible] no loss of [illegible]

[illegible] was caused by a pain in the groin. There was [illegible] the right inguinal group which was painful and tender but [illegible] inguinal region in the morning. In addition the patient [illegible] attributed to myocardial degeneration. He had [illegible] school as a stoker in 1882 had returned to England and [illegible] Vienna [illegible] as I thought his eyesight a contra- [illegible] inguinal [illegible] urethral smears showed pus cells containing [illegible] lay-shin in the onset of the bubo negative repeated [illegible] Wassermann reaction

	From coitus	
[illegible]	34 days	Negative
[illegible]	41 days	Negative

[illegible] one week during which time he ran a swinging temperature [illegible] the bubo was acutely tender but did not suppurate. [illegible] treatment finally maintained to cure on local treatment [illegible]

Rule [illegible] well in other respects and still showed gonococci in urethral [illegible] This in hospital. He had had some humiliation and inflammation [illegible] to Achilles. He was discharged to complete his cure in his ship and [illegible] controlled by blood tests [illegible]

[illegible] Syphilis

The [illegible] of the cervical coronal ulcers, œdema of prepuce which it [illegible] in both groins. The sores had developed twelve [illegible] period of other seventeen or thirty days. No precipitin [illegible] inguinal glands as the following tests show

Test	Time of test after sore	Result
[illegible] test	10th day	Negative
	21th day	Positive
Precipitin reaction	15th day	Negative
Intradermo-reaction	19th day	Negative
Wassermann reaction	13th day	Negative
	20th day	Strong positive

[illegible] Wassermann reaction was done [illegible] grm. [illegible]

[illegible] the prepuce recovery [illegible]

[illegible] aged [illegible]. Syphilis.

[illegible] April 2[illegible] 1938 with multiple preputial sores [illegible] All [illegible] were shallow [illegible] with indurated edges and [illegible] the sore at the [illegible] small glands [illegible] had [illegible] taken place [illegible] 28, 1938 and [illegible] March until [illegible] period [illegible] was [illegible] four [illegible] March 25 [illegible] responsible for the condition. No [illegible]

S. [illegible]	2nd [illegible]	Negative
	20th [illegible]	Negative
	22nd day	[illegible] (Mainly [illegible])
[illegible]	23rd [illegible]	[illegible]
[illegible]	25th [illegible]	Negative
[illegible]	29th day	Negative
[illegible]	30th [illegible]	Negative
[illegible]	[illegible]	Negative [illegible]

[illegible] treatment was [illegible] after the second [illegible]

Case [illegible]. [illegible] Telegraphist aged [illegible]. Syphilis.

The patient was admitted on Ma[illegible] 1938 [illegible] of [illegible] shop [illegible] from Singapore [illegible] reported his condition [illegible] He had already started [illegible]

[illegible] were two [illegible] Both [illegible] and were [illegible] present [illegible] on the left. No [illegible]. There was [illegible] which had [illegible] of [illegible] test. Two [illegible] thirty [illegible] negative [illegible] Wassermann reaction [illegible] negative [illegible]

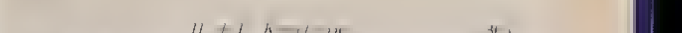
[illegible] Dr [illegible]

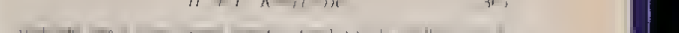
Case 22.—O. G. R. [illegible] aged 28. (1) Syphilis. [illegible]

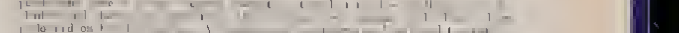
This patient was admitted on May 21, 1938 with the following history. He had [illegible] syphilis since February 1936. [illegible] Wassermann reaction was [illegible] after the third course on April [illegible] 1938. He admitted exposure [illegible] on April 19, 1938 and developed [illegible] No [illegible] was admitted. Ten days after the appearance [illegible] were [illegible] second attempt. He started [illegible] syphilitic treatment [illegible] but was later admitted when his condition was as follows:—

There was an extensive [illegible] round the left side of the corona with excoriation of the skin of the glans and marked oedema of the prepuce which spread in apron-like fashion below the penis as a result of a previous dorsal slit. There were small glands















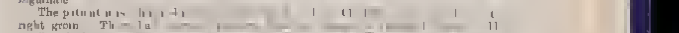








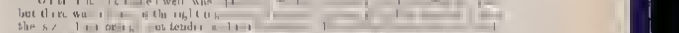


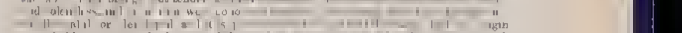














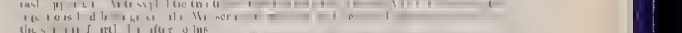


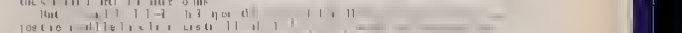










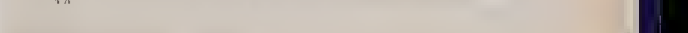


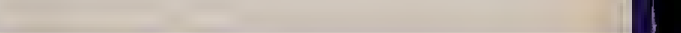




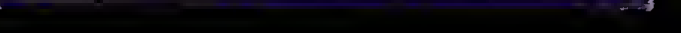








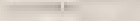




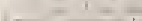








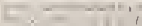


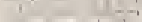




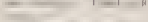








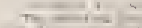




















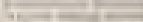






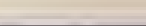


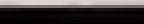




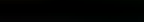


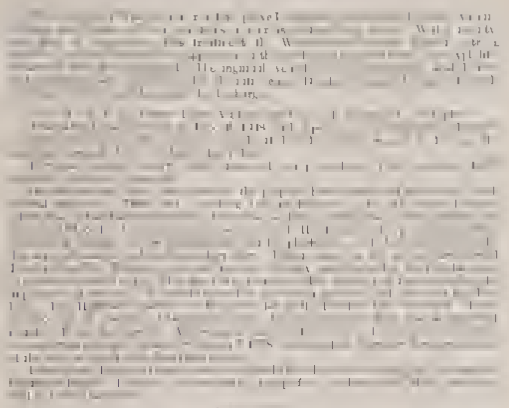












[illegible]

. . . granuloma inguinale was . . . Frei test . . . This method gave some . . . was soon realized that multiple infections might . . . and the same patient In the examination of . . . batches of Frei antigen were used The first six cases . . . with Batch 3 Of these cases, two were diagnosed as lymphogranuloma inguinale, two as chancroid one as syphilis and another . . . adenitis Neither of the cases of lymphogranuloma inguinale responded well to antimony tartrate Cases 7 and 8 were tested with "Batch 4 . . . Frei antigen These cases are of interest because in neither case was the ultimate diagnosis considered to be lymphogranuloma inguinale The reaction in Case 7 may be regarded as atypical owing to the delay in its appearance for no reaction was observed until four days after the inoculation Case 8 presented a history of previous venereal infections including "urethritis in 1936 In view of the fact that patients infected with lymphogranuloma inguinale having once developed Frei antigen sensitivity often retain it for the rest of their lives, it is possible that Case 8 presented a positive reaction from a previous infection possibly the "urethritis of 1936 On the other hand some doubt exists as to the specificity of Batch 4

antigen as a [illegible] been received from Dr. M. H. [illegible] batch gave a positive result in a proved case of chancroid.

The remaining seventeen cases subjected to the Frei test were tested with Batch 6 of the antigen. Two of these cases gave positive reactions, and were both considered clinically to present symptoms of lymphogranuloma inguinale. One of these cases (Case 25) was a double infection of syphilis and lymphogranuloma inguinale who responded well to anti-syphilitic treatment. The other case (Case 9) responded well to intravenous antimony tartrate.

Two cases gave doubtful Frei reactions consisting of a small red nodule about $\frac{1}{8}$ in. in diameter appearing about forty-eight hours after inoculation. One of these cases provided a past venereal history with "urethritis" in 1927 and may at that time have acquired lymphogranuloma infection, although his present infection was diagnosed as syphilis. The other doubtful reactor was diagnosed as syphilis, and presented no past venereal history which might explain the doubtful Frei reaction.

The following table summarizes the results of Frei tests, previous venereal history, and ultimate diagnosis of current infection on the twenty-five patients on whom the Frei tests were carried out.

TABLE I.

	I	Previous venereal disease	Infection
1	Negative	No history	Chancroid
2	Negative	None	Chancroid
	Negative	No history	Syphilis
4	+ + +	No history	Lymphogranuloma inguinale
	+ + + +	Gonorrhœa 1925 Syphilis 1934	Lymphogranuloma inguinale
	Negative	No history	Septic adenitis
7	+ +	Syphilis 1939	Syphilis
8	+ + +	Syphilis 1931–1932 Urethritis 1934 Gonorrhœa 1937 Chancroid 1937	Gonorrhœa and syphilis
9	+ +	Gonorrhœa 1937	Lymphogranuloma inguinale
10	Negative	None	Syphilis
11	Negative	None	Syphilis
12	Negative	Long history	Gonorrhœa and syphilis
13	Negative	None	Gonorrhœa and syphilis
14	Negative	No history	Gonorrhœa and syphilis
15	Negative	No history	Gonorrhœa
16	Negative	No history	Syphilis
17	Negative	No history	Syphilis
18	Negative	None	Syphilis
19	Negative	Syphilis 1916	Chancroid and syphilis
20	?	Gonorrhœa 1937	Syphilis
21	Negative and + + +	No history	Syphilis, orchitis and lymphogranuloma inguinale
26	Negative	No history	Chancroid
27	Negative	No history	Chancroid
28	Negative	No history	Chancroid and syphilis
29	?	Chancroid 1932 Syphilis 1934 Urethritis 1937	Chancroid and syphilis

[illegible] was that [illegible] of the patients tested [illegible] of the [illegible] is characteristic [illegible] infection with [illegible] gonorrhœa [illegible]

[illegible] cases with [illegible] inguinale infections. On [illegible] and possible lymphogranuloma [illegible] past venereal history [illegible] lymphogranuloma inguinale [illegible] gave an abnormal reaction [illegible] This case was [illegible] doubtful reaction. Here [illegible] suggestive of lymphogranuloma inguinale [illegible] such history. Of the eight cases [illegible] doubtful reaction six were either diagnosed as lymphogranuloma inguinale or showed evidence of previous infection with the virus. The remaining two cases, both diagnosed as syphilis gave [illegible] abnormal and doubtful Frei reaction.

It will be seen that what [illegible] obtains at the West Indies lymphogranuloma inguinale [illegible] to the type known [illegible] Nilsson and Purcell (1925) [illegible] that of 104 patients (all upon males) attending the Municipal Venereal Centre, Cape Town, twelve gave positive Frei reactions, two of which were doubtful, ninety-two were negative. Nine of the positive reactors gave a history of inguinal [illegible] of buboes or showed clinical evidence of lymphogranuloma infection. From these results it would appear that approximately 10 per cent of the 104 patients examined had at some time been infected with lymphogranuloma inguinale.

From my series of twenty-five cases approximately 21 per cent gave a positive Frei reaction and 16 per cent were diagnosed clinically as lymphogranuloma inguinale. This would not appear to be a high percentage of positive reactors in such a selected venereal population many of whom had acquired infection on the West Coast of Africa, the home of climatic bubo. It is interesting to note that Case 2a, which gave a positive Frei reaction, was ultimately diagnosed as syphilis metritis and lymphogranuloma infection. In this case the bubo cleared up under anti-syphilitic treatment. The resolution of lymphogranuloma buboes during the treatment of a simultaneous syphilitic infection has already been noted by Frei (1925) [7] and also by Nicholas, Lebeuf and Charpy (1925) [14], and it is quite possible that this case was at one and the same time infected with syphilis and lymphogranuloma inguinale.

It has long been obvious that a positive Frei reaction is no criterion

of active lymphogranuloma infection Such a reaction however almost certainly means that the patient either has or has had in the past a lymphogranuloma inguinale infection In considering the value of the Frei reaction in diagnosis, this point must always be borne in mind and a history of past urethritis and/or buboes in the absence of specific lesions at the time of the test, must lead one to consider the possibility of past infection In any case there is not the slightest doubt that infection with syphilis is much more serious than lymphogranuloma inguinale infection and where there is any doubt or suspicion that the former infection exists its diagnosis must be established as soon as possible, and the requisite treatment instituted immediately The treatment of lymphogranuloma inguinale can only be considered to be of secondary importance to the treatment of syphilis particularly in view of the opinions quoted above that frequently the buboes heal during the course of anti syphilitic treatment

Further, although Forbes-Gould [16] found antimony tartrate of great value in the treatment of lymphogranuloma inguinale his opinions are not held by other workers in the West Indies Thus Pardo Castello Ferrer Ibarra and Trant (1938) [18] working in Cuba where lymphogranuloma infection appears to be rampant, state that in a few cases antimony, pushed until it caused articular pains appeared to give good results but in other cases was a complete failure The above series of cases demonstrates similar results and I confess that I found intravenous antimony tartrate therapy neither an unqualified success nor a specific treatment

Whilst a positive Frei reaction in the light of a previous venereal history must be regarded with caution in making a diagnosis of acute lymphogranuloma inguinale, it is of considerable value in diagnosing this condition when the record of a previous negative Frei reaction is obtainable Similarly when there are symptoms suggesting active lymphogranuloma inguinale infection Further the Frei reaction especially in combination with the Ito Reenstierna test is of great value in differentiating lymphogranuloma inguinale and chancroid from acute erosive and circinate gangrenous balanitis which is sometimes difficult to distinguish from the two former conditions This condition may cause rapid ulceration and sloughing of the urethra and other parts in a remarkably short time and although no cases were encountered in the present series, it must not be forgotten in the differential diagnosis of inguinale buboes

In addition to the Frei test, a modified Ito Reenstierna reaction was employed on several occasions as an aid to differential diagnosis in the present series of cases Before the scope of this paper had been extended to include a consideration of this reaction two cases had already been diagnosed on clinical grounds as chancroid Thereafter no case was designated as chancroid without the evidence of the Ito-Reenstierna reaction In all seventeen cases were tested Of these seven gave a

positive reaction eight were negative and two doubtful The remaining cases were disregarded, as both showed atypical reactions in one showed a reaction to the control while the other gave a reaction to a Frei test performed at the same time Of the that gave a positive Ito Reenstierna reaction five were in the diagnosis of a double infection with chancroid and syphilis were chancroid In two of these cases Ducrey's bacillus was direct smears taken from the sore Eight cases gave a Ito Reenstierna reaction All of these were ultimately proved to have Three of them were suffering from concurrent gonorrhœa and concurrent urethritis and lymphogranuloma inguinale Of the giving a doubtful reaction, one was diagnosed as gonorrhœa and the other as syphilis

Table II summarizes the results of the Ito-Reenstierna [20] reactions, the bacteriological examinations for Ducrey's bacillus previous venereal

TABLE II

Case	Ito Reenstierna	Ducrey's bacilli	Previous History	Clinical Diagnosis
11	Negative	–	None	Syphilis
12	Negative	–	Very extensive (unmistakable)	Gonorrhœa Syphilis
13	Doubtful	–	None	Gonorrhœa Syphilis
14	Negative	–	None	Gonorrhœa Syphilis
15	++++		History not obtained	Chancroid Syphilis
16	+++	–	History not obtained	Chancroid Syphilis
17	Negative	–	Gonorrhœa 1927	Chancroid Syphilis
19	Negative		None	Syphilis
20	Negative	Negative (smear)	None	Syphilis
21	Negative	–	None	Syphilis
22	+++	–	Syphilis 1911	Chancroid Syphilis
24	Doubtful	Negative (clinical purulent)	Circinate and deep dendymal syphilis	Syphilis
25	Negative	–	History not obtained	Syphilis Urethritis Lymphogranuloma inguinale
26	++++	Negative (smear)	Gonorrhœa 1918	Chancroid
27	+++	+++ (culture)	History not obtained	Chancroid
28	+++	–	Urethritis 1911 Gonorrhœa 1915	Chancroid Syphilis
29	+++	–+ (smear)	Chancroid and gonorrhœa 1919 Syphilis 1923 Urethritis and gonorrhœa 1927	Chancroid Syphilis

and the final diagnosis of current infection in the cases in which the Ito-Reenstierna reaction was positive

Analysis of Table II shows that in all the cases giving a positive Ito-Reenstierna reaction, the diagnosis of chancroid was supported by clinical evidence that five of the cases were doubly infected by chancroid and syphilis. The diagnosis of chancroid was not however made on the evidence of the Ito-Reenstierna reaction. All cases showed some clinical evidence of chancroid and two of them positive bacteriological proof. The clinical evidence of chancroid in these patients has been extracted from the case notes and is presented below in tabular form.

TABLE III

Case	Duration	Nature of sore	Nature of bubo
I	6 days	Irregular ulceration Appearance of chancroid	Tender
II	15	Large sloughing preputial sore Dirty base undermined edges Marked edema. Pain	Slimy
III	—	Excessive dirty preputial ulceration Edema of prepuce Excoriation of glans	Small deep tender suppuration
IV	10 to 20 days	Septic and small track painful ulcer Deep with clean cut edges and dirty base	Small tender
V	1 week	Dirty jagged sore of frenum and meatus No induration Can nearly reduce phimosis Dimorphism. Ducrey's bacilli present	Small discrete tender
VI	5	Not seen (Healed on admission)	Fluctuating inflamed pus
VII	30	Indurative Prepuce red painful and tender Excoriation of prepuce Dimorphism. Ducrey's bacilli present	Red and acutely tender

Consideration of the data presented in Tables II and III shows that [illegible] cases tested by means of the Ito Reenstierna reaction 41 per [illegible] evidence of chancroidal infection. Of these 71 per cent were [illegible] concurrently from syphilis.

Treatment of chancroid in this series of cases was conducted partly on [illegible] partly on general lines. The local treatment employed is of no [illegible] interest. Six cases were treated with intravenous Dreuton [illegible] Four later developed syphilis and were ultimately diagnosed as [illegible] infections with chancroid and syphilis. In a fifth case, the [illegible] diagnosis was uncomplicated chancroid and, in another, syphilis [illegible] cases that developed syphilis, there was delay of the serological

reaction in [illegible] and this [illegible] three [illegible] days after [illegible] isolated [illegible] consistently [illegible] with intravenous [illegible] infected with syphilis or not.

In a recent paper in this Journal Dr. Coulter discusses [illegible] seven cases treated with intravenous Dmelcos vaccine [illegible] developed syphilis at a later date. In all cases he kept the [illegible] reaction of syphilis to [illegible] and blood although the [illegible] picture of syphilis was [illegible]. Thus out of [illegible] treated 17 per cent were [illegible] and in all cases the serological [illegible] similarly treated the incidence [illegible] smashing of the serological [illegible] is 16·6 per cent. Our results are [illegible] noted improvement and indeed in [illegible] infected with chancroid, when treated by means [illegible] delay or abolition of the positive Wassermann reaction [illegible] treated in the primary stage with intravenous Dmelcos [illegible] to be an original observation of Coulter. He [illegible] search of the literature (especially of the French [illegible] Dmelcos intravenously more than other workers [illegible] mention of Dmelcos affecting the Wassermann reaction [illegible] vation is interesting, but if it is true it calls [illegible] suggested routine for the treatment and control [illegible] a large scale. There is doubt as to the wisdom [illegible] of intravenous Dmelcos therapy, for although Coulter [illegible] minds a rigid follow up the case leaves his hands after [illegible] the primary condition. It need not be suggested [illegible] officers might be less conscientious. Suffice it to [illegible] in which a letter went astray or to point out that [illegible] (horrible dictu!) becomes separated from his medical [illegible] anyone who has served in a destroyer will know [illegible] visualize too the circumstances of a rapid [illegible] drafts in which the patient passes through the hands of many medical officers. There would in fact be less objection to Coulter's suggestive infringement if such cases if he controlled them from beginning to end himself. At present it the time of his article the Navy was in a state [illegible] with demobilization its most chaotic. In other words thorough investigation [illegible] sore, particularly one of doubtful incubation and clinical appearance is in the initial stages of far greater importance than treatment. This is Coulter's own summing up of his warnings against misinfringement and

[illegible] diagnosis of syphilis but [illegible] whether he takes [illegible] wise advice Coulter agrees with the textbooks in withholding local treatment for the primary condition until such time as the diagnosis is established, but recommends general treatment with intravenous Dmelcos vaccine after an effort of ten days to exclude syphilis by means of the microscope Furthermore he would provide all ships with the facilities [illegible] doing the same Yet in speaking of the effects of Dmelcos on cases in which syphilis developed he states that in each of these cases clinical signs of syphilis appeared in the normal manner but serological and bacteriological evidence was delayed beyond the usual limits What difference can there be in treating the primary condition by general rather than by local means? It is well known that some local treatments destroy the bacteriological evidence of syphilis Dmelcos vaccine therapy intravenously according to Coulter does not only do this but it delays the serological reaction as well so that however suspicious one might be of the condition being syphilitic one might be unable to obtain proof until the manifestations of secondary syphilis presented themselves Surely one need not be so jealous of the number of days sickness in the primary stage, thus gaining admittedly many days on the chancroidal swings but losing them again on the roundabouts of secondary syphilis

Coulter asks if diagnosis can be sacrificed for treatment, if treatment can be sacrificed for diagnosis or if a happy medium can be found It is my opinion that if he does not actually sacrifice diagnosis for treatment he does at least defer the diagnosis and in many cases leaves it to someone else In the second instance I see no reason why treatment should not be sacrificed for diagnosis In chancroidal infection at its worst one is dealing with only a temporarily disabling local disease whereas no one would deny the seriousness of syphilis and the importance of making as early a diagnosis as possible The medium that Coulter finds in answer to his third question does not strike me as being very happy After ten days investigation for the exclusion of syphilis a distressing treatment is instituted which aims at the cure of the primary condition, apparently with the object of saving man-hours in work The patient is discharged to duty and may well present himself with secondary syphilis in spite of a careful serological control at short intervals I think that the indication for the use of intravenous Dmelcos should be extensive tissue destruction only and that there can be no arbitrary time limit to the search for the exclusion of syphilis For instance, in one of my cases (25), the *S pallida* was identified thirty two days after admission to hospital

Recently three cases have presented themselves for consultation at [illegible] N Hospital Cape, each sent up by a different medical officer The first two had been given between 3 and 1 gr of S A B for sores diagnosed clinically as syphilis without bacteriological or serological proof Requests

accompanied the cases for an opinion ... case for consultation appears as Case 2 ... S A B had been exhibited *because* the ... In the circumstances it would be unwise to suppl... treating the primary condition at the expense a ... disease as a whole

The diagnosis of syphilis is by no means always simp... of twenty nine cases, twenty were found to be sufferi... 45 per cent only was the diagnosis uncomplicated ... concurrently in 20 per cent gonorrhœa in 25 per ... granuloma in 5 per cent

Gonorrhœa complicating syphilis presents no ... diagnosis, but chancroid and lymphogranuloma ingu... diagnosis unless considerable judgment is exercised ... chancroid is indicated by clinical appearance ... presence of Ducrey's bacillus and a positive Ito Reenstruma reaction But it does not follow that a case presenting all these characteristics or as many as may be considered necessary for a diagnosis of chancroid may not later become indurated and develop the qualities of a primary chancre This sequence of events did in fact occur in five of my cases Similarly a positive Frei test as previously pointed out must be interpreted with caution, on account of the possibility of antecedent infection In addition to this factor a case presenting clinical signs of lymphogranuloma inguinale and giving a positive Frei reaction may be infected concurrently with syphilis or may develop signs of it later Such a case also occurred in my short series Unless this possibility is borne in mind valuable time may be lost (and was lost in my case) before the treatment of syphilis is begun

Whatever the complicating factor—chancroid gonorrhœa lymphogranuloma inguinale, or Vincent's infection—recognition and early treatment of the syphilitic infection is the important matter The fullest possible use should be made of the microscopic examination of the secretions from the primary sore, or from gland puncture My experience agrees with that of Coulter that the average medical ulcer is attended with the evidence of three negative examinations by dark ground illumination and from some of my early cases it would appear that I shared the belief This is clearly not enough and I would now put three as the limit to the search for the *S. pallida* in the case of a sore presenting suspicious signs of syphilis Furthermore unless there is much destruction of tissue or great chronicity no treatment which obscures the microscopic evidence of syphilis should be necessary Local applications of normal saline solution or precipitated sulphur do not obscure this evidence

In a recent paper [8] Gougerot discusses the diagnosis of chancre mixte He considers it of great practical importance and puts

[illegible] infections [illegible] case [illegible] systematically [illegible] After [illegible] he lays [illegible] govern [illegible] diagnosis [illegible]

[illegible] into [illegible] syphilis [illegible]

[illegible] must be made in the [illegible] The [illegible] is only exception [illegible] polymorphonuclear [illegible] at the edge A single negative [illegible] must be repeated

[illegible] must be done in series It is normally negative [illegible] weeks In a syphilitic chancre it does not become positive [illegible] hours But a mixed sore develops ahead of a syphilitic chancre [illegible] the mature incubation period of the latter In recognizing that the syphilitic chancre develops twenty one to twenty eight days later than the chancroid one must not give full value to a sero reaction which develops forty days at the earliest forty five to sixty days on an average after the onset of the chancroid Before the sixtieth day a negative sero reaction means nothing, and must be repeated after a suitable interval

(5) It will be borne in mind that vaccines will upset the blood Wassermann For this reason one will avoid (except in a case of urgent necessity) intravenous injections of Dmelcos or if one is obliged to employ them, one will question the value of a blood Wassermann which has become positive One will not immediately diagnose syphilis One will wait and repeat the blood Wassermanns, after having stopped the vaccines

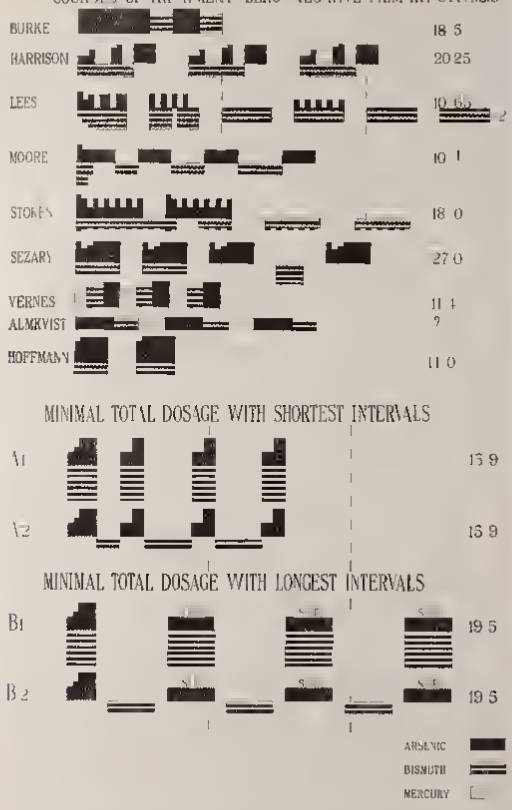
Gougerot then goes on to say that to misunderstand these very simple facts will cause one to give a false value to negative results of high power microscopy and sero diagnosis He concludes his article by stating that any patient suffering from a soft sore must be watched both clinically and bacteriologically for fully three months this will permit of entire safety in diagnosis

A consideration of rule 4 will explain why the apparent incubation period of syphilis is increased in a sore of mixed infection It probably also explains why the positive serological reaction of syphilis appears to be suppressed in the case of such a mixed sore treated with intravenous [illegible] In Gougerot's experience the effect of Dmelcos would appear to be that of causing a false positive Wassermann reaction

The treatment of syphilis has recently come under review by the Naval

...l authorities who considered that certa... ...le ... is much arsenical treatment as modern auth... ...ered necessary for a permanent cure In 1336 instructions w... ...ulgated for the guidance of medical officers without spec... ...nce of treating syphilis These instructions were elastic and although the total dosage is clearly laid down the individual dosage is presumably left to the discretion of the medical officer concerned with the case I have considered it worth while to try to chart in graphical form how treatment of syphilis in the Navy compares with that of some of the more eminent modern authorities in different countries This offers some difficulty because of the elasticity of the instructions issued to medical officers, and also because dosage is not mentioned except in the case of S A B It is possible however to chart the minimal total dosage and the shortest intervals, in order to compare it with the minimal total dosage and the longest intervals Then any range of treatment falling within these two would fulfil the minimal requirements of our instructions With regard to a single injection there will naturally be scope for individual preferences as to dosage for this is not laid down Preference is given to bi weekly injections except in the case of S A B In the course used in this series I had no hesitation in working up until I was giving 0 75 grm twice weekly but this is perhaps a heavy dosage The modern view is to allow one day of rest for every 0 15 grm given in which case the maximum dosage would be 0 6 grm at four day intervals In charting the courses recommended by the Naval authorities I have arbitrarily started with 0 3 grm twice weekly and worked up through 0 45 to 0 6 grm twice weekly This dosage need not necessarily be adhered to, and is not specifically recommended In both charts one large square vertically represents 1 grm of arsenic, while one large square horizontally represents two weeks.

The charting of the bismuth offers more difficulties because the number of bismuth preparations now on the market is almost legion and they have not so far been standardized In the chart showing the treatment of the modern authorities an attempt has been made to indicate the amount of bismuth exhibited according to the metallic content of the particular compound employed In the second chart, showing our own instructions as to treatment a different standard has been employed The instructions advise that for choice some form of bismuth should be given either concurrently with arsenic or in the man's own ship or establishment between the arsenical courses No mention is made of the dosage or the duration of the course On this station two bismuth preparations are employed In hospital bisoxyl 3 c.c. intramuscularly, once a week is the bismuth compound of choice Afloat, bicreol 1 c.c. intramuscularly, once a week is employed As only these two are used I have found it more


COURSES OF TREATMENT SERO-NEGATIVE PRIMARY SYPHILIS
BURKE
18 6
HARRISON
20 25
LEES
10 66
MOORE
10 1
STOKES
18 0
SEZARY
27 0
VERNES
11 4
ALMKVIST
9
HOFFMANN
11 0
MINIMAL TOTAL DOSAGE WITH SHORTEST INTERVALS
A1
15 9
A2
15 9
MINIMAL TOTAL DOSAGE WITH LONGEST INTERVALS
B1
19 5
B2
19 5
ARSENIC
BISMUTH
MERCURY

[illegible] the bismuth according to th[illegible] [illegible] [illegible] of two months for the intermediate cour[illegible] [illegible] before turning to a study of the two charts the following quot[illegible] [illegible] The League of Nations Investigation and Report on Treatment of [illegible] Syphilis [12] should be noted

6 The principles to be followed in carrying out the actual tre[illegible] should be as follows —

(a) To employ a comparatively heavy individual dosage of t[illegible] arsphenamines and of the bismuth or mercurial compoun[illegible] the doses being administered in comparatively rapid successi[illegible] especially at the commencement

(b) To maintain a persistent attack on the disease avoiding interva[illegible] of such length as to afford the parasite an opportunity [illegible] recovering

(c) To administer approximately as much treatment in primary as in secondary cases

7 'The material study does not enable a clear decision to be mad[e] as to the relative merits of intermittent treatment with courses of inject[ions] in rapid succession separated by rest intervals of some weeks and continuous treatment or between the simultaneous employment of both arsenical and bismuth or mercury and the system in which bismuth and mercury are withheld until a number of arsenical injections have been administered Nevertheless it seems practicable from the results of the analysis, and from the personal experience of the experts, to formulate a system of intermittent treatment and one of continuous treatment either of which can be expected to yield satisfactory results in ordinary cases of early syphilis It seems possible that the intermittent treatment that is suggested may in effect be continuous or practically continuous treatment owing to the continued absorption of bismuth from the sites of the injection for some weeks after any temporary suspension of the treatment

Although this committee of experts which met in November 1931 have not committed themselves as to the relative efficacy of continuous treatment, the intervals in their plan of intermittent treatment are short being from three to five weeks between any two courses

If we now turn to the charts it will be seen that the course of treatment represented by Chart A 2 compares very favourably with the general scheme of modern treatment and B 2 also favourably, but rather less so Moreover, S.A B is considered more toxic than N A B An attempt at continuous treatment by shortening the arsenical interval and "bridging" it with bismuth certainly seems to be the present trend in anti specific treatment Sufficient time has not elapsed since its institution to be sure as to its ultimate effect on the disease but it does seem a far more rational line of attack

Courses A 1 and B 1 in which bismuth is given concurrently with arsenic have comparatively long intervals in which the patient is treatment free If one were to collect at random say 100 syphilis case cards (Form S 57b) I feel sure that 80 of them at least would show these long intervals, as this type of interrupted treatment appears to be the one of choice amongst Naval medical officers Recommended for W R and a further course in three months time has almost developed a smack of tradition My object has been to show in graph form that there is no intention on the part of the Admiralty for this tradition to continue in perpetuity While the present ruling that medical officers afloat should not give N A B remains in force prolonged cruises will of necessity cause interruptions in treatment unless resort is made to S A B (which in my opinion is more toxic and painful) Apart from this I feel sure that medical officers afloat would take much more interest in the treatment of syphilis if they were allowed to conduct it themselves

SUMMARY

After a short introduction, embracing diagnostic and therapeutic methods twenty nine cases of inguinal buboes are presented for discussion The Frei Hoffmann and Ito Reenstierna reactions were employed as an aid to diagnosis in the majority of cases

The Frei test proved specific Of the six cases that gave a positive result, four were diagnosed as lymphogranulomia inguinale one had a history suggestive of previous infection and one gave an abnormal positive which was disregarded A reasonable explanation is given for two cases showing doubtful results

It is pointed out that the Frei test must be interpreted with caution especially in cases with a long venereal history Syphilitic infection can accompany infection by the virus of lymphogranuloma inguinale Hence an early Frei positive reaction should not end the effort to exclude syphilis

Intravenous tartar emetic was employed in the treatment of lympho granuloma inguinale Comparatively massive doses were used Reactions to the drug were noted Antimony tartrate did not prove itself specific

One case diagnosed as a double infection of lymphogranuloma inguinale and syphilis responded well to anti specific treatment No improvement had been noticed after four intravenous injections of antimony tartrate

A modified Ito Reenstierna test was employed to assist differential diagnosis in seventeen cases It had to be borne in mind that previous chancroidal infection would probably cause a positive reaction In the one case showing a previous history of chancroid the bacillus of Ducrey was isolated so that this reservation did not apply

The Ito-Reenstierna reaction also proved to be specific Every case giving a positive reaction showed some confirmatory signs of and was finally diagnosed as chancroid But 71 per cent were infected concurrently

with syphilis. The value of the test must therefore not be overestimated early in diagnosis. Double infections are common, and proof of chancroid does not exclude syphilis. The importance of diagnosis in mixed infections is emphasized.

The treatment of chancroid by means of intravenous Dmelcos is not recommended except in the urgency of marked tissue destruction. The effect of the vaccine upon the bacteriological and serological aspect of syphilis is discussed.

The importance of the diagnosis of syphilis is stressed, especially with reference to multiple infections.

The treatment of syphilis as recommended by the Naval authorities is compared with the treatment recommended by modern syphilologists. For the sake of simplicity, the comparison is made in graph form.

My thanks are due to the late Sick Berth Petty Officer Stevens, who was in charge of the venereal ward and was of great assistance to me, to Dr. F. W. E. Purcell, for his chart incorporating the modern views on anti-spirochæte treatment, and to Dr. M. H. Finlayson for his supply of Frei antigen.

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ON THE USE OF THE 'SERVICE AFLOAT' X-RAY SET

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It has always seemed illogical that, whereas the student devotes many long and weary hours to the cutting and staining of pathological sections, he devotes no time at all to the principles involved in radiology or to the taking of skiagrams, and this, in spite of the fact that after qualification a doctor invokes the aid of radiography infinitely more often than that of morbid histology.

The issue of a new type of general service X ray equipment seems an adequate excuse for publishing a short article on the technique of radiography, so that the best possible use can be obtained by medical officers who have charge of this equipment.

Instructions as to the erection of the new set are enclosed with it, and at the end of these instructions a small list of exposures is given for various parts, and it is probable that if one adheres to the factors there given the result will be satisfactory. It is, however, advisable to know the principles upon which these factors are based, so that patients of abnormal size and parts of the body not mentioned there may be adequately investigated.

The factors concerned in producing a skiagram are of two kinds —

(*a*) Those governing the amount of X radiation falling on the film, and

(*b*) Those affecting the film itself.

The factors concerned in (*a*) are (1) Kilovoltage entering the tube, (2) milliamperage through the tube filament, (3) tube-film distance, (4) time of exposure.

The factors in (*b*) are (1) The speed of the film, (2) presence or otherwise of intensifying screens, (3) time of development and temperature of the developer.

Let us now apply these factors to the set under discussion.

Factors of (*a*)

(1) *Kilovoltage*.—This is fixed at 60 k.v.

(2) *Milliamperage*.—This will vary according to the state of the ship's mains and may be a little low if there is any other heavy demand on them, such as working searchlights or electric winches; therefore, before putting the film in position make a trial exposure of about two seconds and note on the milliampmeter what exactly is the strength of the current.

(3) *Tube-film Distance*.—The intensity of X rays, like that of light, varies inversely with the square of the distance from the source of

generation so that if an object is twice as far from the focal spot of the tube, it will only receive a quarter the radiation Should one want to take an X-ray film of an object at twice the distance one would have to increase the exposure time by four On the other hand the nearer the focus is to the film the greater will be the distortion of the image on the film, so that, to get a true reproduction of a part in a skiagram, the further the focus is from the film the better

It will be seen that these two factors are contrary to one another, and therefore one must compromise on such a distance that distortion will not be too great nor on the other hand will the exposure time be too long The distance at which one generally takes skiagrams is 28 in but with the portable set at present supplied it has been found that 24 in gives reasonably satisfactory results

(4) *Time of Exposure*.—The amount of radiation falling on a film depends directly on the time of exposure that is to say, that if all other factors are equal doubling the exposure time doubles the amount of X rays that fall on a film and this in turn doubles the density of the image This factor can be varied in accordance with a definite rule following a short formula which we will discuss below

If the number of milliamps put through the tube is multiplied by the exposure time in seconds, the answer is a factor expressed in milliamp seconds It has been found in practice that working at 24 in and using a film with double intensifying screens satisfactory pictures will be obtained if 2 5 milliamp seconds are given per centimetre thickness of the part to be examined, providing the part is of more or less homogeneous density This figure would not apply to the lungs nor to the abdominal viscera For example if a part is 6 cm thick, then $6 \times 2.5 = 15$ milliamp-seconds must be given The milliamperage reading of the set will already have been found at the trial exposure and if this figure is divided into the number of milliamp seconds that is required then the product will be the requisite time of exposure in seconds that is to say if 15 milliamp-seconds is the required factor and the number of milliamps being put through the tube is found to be 3 ma, then the exposure time for a part 6 cm thick will be 5 seconds If 10 milliamps are being obtained, then with the same factors only 1 5 seconds need be given It will therefore be seen that with the voltage and the tube-film distance fixed, the requisite exposure time for any part can be easily worked out The exposure formula is in fact

$$\text{Exposure time in seconds} = \frac{\text{Thickness of part in cms} \times 2.5}{\text{Milliamps obtained in trial exposure}}$$

It will be seen from the instructions that the maximum permissible load is 10 milliamps for 7 seconds which equal 70 milliamp seconds so that an exposure of more than 70 milliamp seconds should never be given

Factors in (b)

The factors in the film itself are also partially variable

(1) *Speed of the Film*.—This cannot be altered by the operator and depends upon the type of film which has been bought from the manufacturer

(2) *The Presence or Otherwise of Intensifying Screens*.—The intensifying screen is a piece of strong cardboard coated with a fine emulsion of a salt which will fluoresce when radiation falls upon it

These screens are placed on either side of the film which by the way is coated with emulsion on both sides, and when X-radiation falls on the screens the fluorescent effect produced acts on the film in addition to the direct action of the radiation

Screens vary a good deal in speed some being much faster than others, but as a general rule, all other factors being equal, an exposure using the film with two screens will only need to be about a third as long as an exposure without screens, in order to get the same result on the film At one time only a single intensifying screen was issued to most ships but now two screens, one for either side of the film are generally issued

A pair of screens are labelled 'Back Screen and 'Front Screen", and it is important that they should not be changed round The back screen should be against the back of the cassette, which is the part that opens

(3) *Time of Development and Temperature of the Developer*.—The standard temperature for developer is 65° F If all other factors in the exposure have been correct and the developer is fresh, then at this temperature the developing time should be five minutes If the temperature is above 65° F, the developing time will be reduced If the temperature is below it will be increased, but in any case the temperature of the developer ought never to fall below 60° F or rise above 70° F The following rough figures are an indication —

Temperature	Time
60° F	7 minutes
65° F	5 minutes
70° F	4 minutes

As the developer gets older, so the length of development time is increased

When the developing is finished the film should be fairly black, with the bone or part being examined showing through faintly when the film is held up to the dark room light. When this stage has been reached, the film should be rinsed in clear water and fixed in the hypo bath

Position.—When taking a skiagram of a suspected injury, always have the tube centred over the suspected side of the injury Always take a view in two planes, preferably antero-posterior and lateral, though in the case of injury to the carpus, it would be advisable also to take an oblique view in order to show up the scaphoid. Always get the suspected injury as near

the film as possible ... the nearer the film the lesion is the better, as a rule it is shown up in the skiagram. For example, if a fracture of the patella is suspected, when taking the skiagram have the patient in the prone position, so that the patella is nearer to the film than the other structures forming the knee joint. In injuries about the joints have the tube centred over the actual joint space. In the knee this will be found to be rather lower than one suspects.

For lateral views of the skull, it is advisable to get the sagittal plane of the skull as far as possible parallel with the plane of the film and the tube should be centred just above the uppermost ear. For an antero-posterior view of the skull the sagittal plane should be perpendicular to the plane of the film, and the nose and forehead should be lying on the cassette with the tube centred over the occiput.

THE DETECTION OF EARLY PULMONARY TUBERCULOSIS IN THE IMPERIAL JAPANESE NAVY

(Sakurai and Nagashige. June 1938. *Bulletin of the Naval Medical Association.*)

An Abstract by Surgeon Commander C. H. Gimlette, M.B., R.N.

A paper was published in the *Bulletin of the Naval Medical Association* of June 15, 1938, which is considered to be of interest to Naval Medical Officers because it shows the lines upon which Japanese Medical Officers have been dealing with the problem of preventing pulmonary tuberculosis in the Navy, a problem which we all have to face.

The authors are Surgeon Commander T. Sakurai and Surgeon Lieutenant E. Nagashige of the Imperial Japanese Navy. In their foreword and throughout their paper the authors speak of pleurisy and of pulmonary tuberculosis, but from the context it seems obvious that they consider all pleurisy to be tubercular in origin. The foreword commences by pointing out what a great menace these conditions are to the fighting efficiency of any Service. They emphasize the fact that those who are in any way responsible for the health of the men in such Services must seize any and every opportunity to eliminate these diseases from the Services. In other words they feel that prevention is better than cure.

In this paper they offer their ideas for detecting early, and for isolating early the unsuspected cases of tubercle, which would act as reservoirs of infection.

While the authors were employed at the Naval Signal School they realized that there was a tendency for the number of cases of pleurisy amongst young Japanese seamen to increase year by year, and, by order of the Superintendent of the school, they attempted to evolve a method of

detecting these cases in as early a stage as possible They determined to try to discover all cases of open tubercle, that is to say, to eradicate the source of infection

In the article which follows they relate the results of interest, which they obtained in a comparatively short period of study, giving their impressions, and soliciting correction from other observers Their next consideration is a description of the "Method of Investigation carried out at the Naval Signal School

The most important problem in the early detection of pulmonary tuberculosis and pleurisy, they rightly observe, is the detection of the initial infection at the earliest possible moment

According to investigations carried out by medical officers of eminence in the Japanese Navy, the number of men who show a negative reaction to the Von Pirquet or the Mantoux tests amounts, in the case of young seamen, to 40 to 10 per cent, but the percentage of negative results decreases gradually with age, until, amongst men of the rating of First-class Petty Officer, there are no cases giving negative results Again, according to the investigations of the late Surgeon Captain Kobayashi, the incidence of pleurisy is greater amongst those men, whose Mantoux tests have changed, shortly before from negative to positive, than amongst those men who showed a positive Mantoux test in the first place The conclusion to be drawn would appear to be that a short time after a change to a positive Mantoux test is the moment at which to be on guard against a possible attack of pleurisy and that in order to discover this moment repeated tests should be continued in men who show a negative reaction to the Mantoux test, and that it is necessary to keep them under observation after they have changed to a positive Mantoux reaction Among 834 ratings at the Japanese Naval Signal School, who were tested by the Mantoux test on entry, 481 (about 50 per cent) were negative

For the reasons given above the discovery of positive reactions, as they arise is the first step to the early diagnosis of pleurisy, but since the authors were dealing with young seamen they felt that they could not be certain how long previously the positive reactions had passed through the transformation stage from negative to positive, so they decided that it would be best to take measures to detect early cases of pleurisy by examining the whole ship's company

The late Surgeon Captain Kobayashi was of the opinion that susceptibility to pleurisy could not be foretold from the results of the Mantoux test Surgeon Commander Yuki formed the opinion that help should rarely be expected from the recording of measurements of the chest of the capacity of the lungs, weight of the body, temperature and sedimentation rate, in diagnosing pleurisy early, even if these records were taken monthly for several months in succession For the diagnosis of pulmonary tuberculosis in the Navy, however the authors are of the opinion that it is essential to find evidence of the presence of tubercle bacilli in the sputum

[illegible] temperatures [illegible] inspection [illegible] whole ship [illegible] carried out frequently But for detecting cases of pulmonary tuberculosis they chose the method which they call the Mass Inspection of Sputum which Surgeon Commander Takada had used at Kure Naval Hospital

In this method one division of Naval Signal School ratings consisting of about one hundred men was lined up with the instructors and formed into groups of twenty Each group was provided with a container of the Petric Dish type which was passed round to each man in turn Each man was made to expectorate into it The total amount of sputum thus collected was about 20 c c from each group To this sputum an amount of antiformin equivalent to 20 per cent, was mixed and stirred up and allowed to stand for one hour Then 20 c c of water were added and the whole amount was centrifuged at 3000 revolutions per minute for half an hour The supernatant fluid was thrown away, and the sediment was stained and examined for tubercle bacilli If tubercle bacilli were found in any one group this group was divided up again into groups of five men, and the same process and examination for tubercle bacilli was repeated for each of the groups of five men From the groups of five men in which tubercle bacilli were found each individual had his sputum examined separately If these examinations were begun on a Tuesday if tubercle bacilli were present the man in whom the tubercle bacilli were present could unfailingly be detected before the end of the week

The method of taking temperatures of all ratings once a week was carried out as follows One division of about a hundred men took its turn every day to muster outside the Sick Bay, a different division falling in each day

Each man was given a thermometer which he placed in his mouth under the tongue when the order was given After five minutes the thermometers were inspected and those men who showed a temperature above 98·6 had their temperatures taken, morning and evening for three days At the time of this muster opportunity was taken to make a note of the men's faces, general appearance, physique &c so as to detect any men who looked ill or appeared to show a loss of weight

Next the authors come to the consideration of their findings in the search for cases of pulmonary tuberculosis The investigation lasted from June 25 1936 until October 13 1936 The total number of ratings under investigation was 854 The number of cases of pulmonary tubercle discovered was five or a percentage of 0·6 per cent approximately This was 62·5 per cent of the number of cases recorded at the Naval Signal School for the period (this number was eight)

The number of cases of pulmonary tuberculosis, which have been returned each year at the Naval Signal School, is shown in Table I

The number of cases of pulmonary tuberculosis diagnosed in the routine

TABLE I [illegible] [illegible] [illegible]
[illegible] SIGNAL S[illegible]

Mo.	9	190					
January	—	—	1				
February	—	—					
March	—	1	1				
April	—	—					
May	—	—					
June	—	—					
July	1	—	1				
August	—	1					
September	—	2					
October	—	1					
November	—	—	1				
December	—	—					
Totals	1	5					

way was the same number as in an average [illegible] detected for the year was doubled when those cases [illegible] of "mass inspection of sputum" were included

As will be seen from the study of Table II, the cases detected by mass examination of sputum showed temperatures varying but little from the normal, in two cases the pulse-rate was up to 100, but the sedimentation-rate helped little in diagnosis From the column of dates, it will be seen

TABLE II —SHOWING THE CONDITION OF THE CASES DISCOVERED BY THE MASS METHOD OF EXAMINATION OF SPUTUM WHEN FIRST DETECTED

Date	No. of case	Name	Rating	Age	Temp. °F	Pulse	Sedimentation-rate	No. of T. B. found	X-ray
3 7 96 to 6 7 96	1	Tamada	P O 3rd Class	23	97 2	70	7	3	Cavity below L clavicle
8 7 96 to 10 8 96	2	Watabe	Seaman 1st Class	23	99 2	100	7	7	Cavity below R clavicle
8 7 96 to 11 7 96	3	Inami	Seaman 1st Class	21	98 0	80	—	1	Cavity below R clavicle
10 10 96 to 15 10 96	4	Mori	Seaman 1st Class	22	98 6	66	9	2	Infiltration below L clavicle
20 10 96 to 22 10 96	5	Kita Baynshi	Aviator 1st Class	18	99 0	100	10	2	Cavity under R clavicle

that the shortest time taken to detect the case was one day and the longest was four days In the detailed examination of the patient after the discovery of tubercle bacilli in his sputum, the laboratory X-ray and clinical findings were in general agreement In the above cases, there were no conspicuous symptoms except the expectoration of tubercle bacilli But if these men had been made to work while in this condition there would have been a risk that the hidden tubercular focus would have lit

up into very active pulmonary tuberculosis, and moreover they were coughing up tubercle bacilli and were a constant menace to those who had to live with them

The authors next consider their findings in the search for cases of undetected pleurisy This investigation lasted from June 1 1936, until November 20 1936 The total number of temperatures recorded was 24,375 The number found with raised temperatures was 98 The number found with pleurisy was 2 The number of men examined while already on the Sick List was With acute pharyngitis 34 acute tracheitis 4, pleurisy, 2 The proportion of cases of pleurisy discovered was 0 24 per cent of the men examined, 20 per cent of the total number of cases of pleurisy which were returned during the period of the investigation

TABLE III —SHOWING THE NUMBER OF CASES OF PLEURISY WHICH HAVE OCCURRED ANNUALLY AT THE NAVAL SIGNAL SCHOOL.

Month	1933	1934	1935	1936	1936
January	1	1	0	0	1
February	0	2	3	1	0
March	0	3	1	3	0
April	0	-	2	11	0
May	0	2	7	9	1
June	1	0	4	1	4
July	0	2	5	7	5
August	2	3	4	0	1
September	0	2	9	1	0
October	0	3	1	1	0
November	0	0	0	0	0
December	0	0	0	1	0
Total	6	20	36	36	14

It will be seen that following an increase in the number of the personnel at the school since its opening, the number of cases of pleurisy increased rapidly and that in 1934 and 1935 it was approximately the same number, averaging about one case every ten days For what reason was it then, that in 1936, in spite of the previous tendency to increase rapidly the number of fresh cases of pleurisy reported suddenly fell to fourteen, approximately one-third of the number in 1934 and 1935? In comparing 1936 with other years there was very little difference in the work climate living conditions, &c at the Naval Signal School

If it be granted that pleurisy in the Navy follows an initial infection by the tubercle bacillus, then it appears that the method of 'mass examination of sputum by detecting early cases of open pulmonary tuberculosis who are a source of infection to those constantly living and working with them, has been effective in eliminating such a source of infection

The authors have frequently heard it stated that, among groups of young people, tuberculosis and pleurisy may break out suddenly in several centres The majority of cases of pleurisy which were recorded in 1936

were, at the time of entering the Signal School, within a year of their showing a negative Mantoux test The authors have no doubt that the late Surgeon Captain Kobayashi's theory that all pleurisy follows an initial infection with tubercle bacilli is correct That is to say such a sudden reduction in the incidence of pleurisy, as occurred in 1936, is to be taken to mean a sudden reduction in the incidence of cases of open pulmonary tuberculosis, acting as the source of infection This accords exactly with the facts

The next point which calls for comment is the smallness of the proportion of pleurisy cases discovered, compared with the proportion of cases of pulmonary tuberculosis discovered, i e two of pleurisy and five of pulmonary tuberculosis This was unexpected It is true that the number of pleurisy cases had greatly decreased, but in the search for this disease each man had his temperature taken once a week, whereas in the search for pulmonary tuberculosis he had one such examination only, and in spite of this the number of cases of pulmonary tubercle detected was the greater This showed that there was a difference in the type of examination required for each of these diseases but further it seemed to show that the method used for detecting pleurisy was not delicate enough, for the onset of pleurisy being sudden, it could develop in less than a week of slightly raised temperature This has been confirmed by the recordings of 24,375 temperatures

The authors are of the opinion that the sedimentation rate is of little value in detecting cases of pulmonary tubercle and even of less value in weeding out cases of pleurisy

They even go further and say that they consider it to be absurd to suppose that one can either predict or make so early discovery of pleurisy from changes which may appear in records kept over a long period of chest measurements lung capacity and body weights

They are of the opinion that pulmonary tubercle in the Navy is more of a slow insidious onset, whereas pleurisy breaks out suddenly in an acute form

The discussion of the findings and the arguments which follow have been very difficult to translate The Japanese used gives the English scientific terms rendered phonetically and represented by ideographic characters to give the sounds The results in some cases are quaint and difficult to elucidate

The subject matter now following is a free translation rather than a literal translation, and therefore it is possible that it may in some places fail to be an absolutely exact record of what the authors intended to convey It is hoped that such errors are few

In discussing their Table IV the authors draw attention to two patients discovered to have slightly elevated temperatures, fairly high pulse rates, and increased sedimentation rates The chests of these men were shown to be diseased by X ray, and pleural fluid, aspirated from their chests, were shown to be tubercular

A perusal of the cases which were returned for 1936, shows that two out of the fourteen cases had temperatures under 98° F., and that all the ten who had their sedimentation rate taken showed a considerably increased rate, the highest 99 per hour and the lowest rate 19 per hour, giving an average of 51 millimetres in an hour

TABLE IV.—CONDITION OF CASES OF PLEURISY DETECTED

Naval Class	Surname	Age	Rating	Date of Admission to Hospital	Temp. F.	Pulse rate	Sedimentation rate	Work	Mantoux test on entry	Remarks
1	Tait	24	P.O. 2nd Class	18.3.36	100.4	90	—	—	—	—
2	Ottawa	19	Seaman 3rd Class	6.3.36	97.6	68	—	—	Neg.	—
3	Kawasaki	23	P.O. 3rd Class	30.3.36	99.8	100	—	—	—	—
4	Nakamura	23	Seaman 3rd Class	4.5.36	102.8	96	—	—	Pos.	—
5	Taguchi	17	Seaman 3rd Class	14.6.36	101.8	90	99	Training	Neg.	—
6	Nashima	21	Seaman 3rd Class	16.6.36	101.8	90	39	Under training	Neg.	—
7	Tsuka	21	Seaman 3rd Class	9.11.36	98.8	91	19	—	Pos.	Picked up for temp.
8	Wakasa	21	Seaman 3rd Class	2.6.36	99.6	92	11	—	Neg.	—
9	Matsuda	17	Seaman 3rd Class	25.6.36	101	97	33	Under training	Neg.	—
10	Nomura	21	Seaman 3rd Class	3.8.36	99.6	95	31	—	Pos.	Picked up for temp.
11	Yamakuk	21	P. 3rd Class	3.8.36	100.4	93	33	—	Neg.	—
12	Sasaki	18	Artificer 4th Class	27.8.36	103.6	120	2	Under training	Neg.	—
13	Nishida	19	Seaman 3rd Class	31.8.36	100.8	91	3	—	Pos.	—
14	Hayashi	21	Seaman 3rd Class	1.9.36	99.0	124	71	—	Neg.	—

Further points to which attention is drawn are that, of the above 14 cases of pleurisy four were cases in which it broke out during the period when they were under training and doing fairly strenuous physical work; also it should be noted that eight out of the twelve cases who had a Mantoux test done on joining the Naval Signal School a year previously, showed a negative Mantoux test at that time

The authors next pass on to consideration of their findings in general They point out that the five cases of open pulmonary tuberculosis, which

they discovered in the [illegible] inspection of sputum all had early infiltrations [illegible] the clavicle which appeared to have at their centres either actual cavities or caseous breaking down areas The age of the cases was round about 20 years, and these early infiltrations caused practically no symptoms, but soon advanced rapidly and finally broke down into obvious cavities These facts are in accord with the opinions held by many authorities that it is very difficult to diagnose early pulmonary tuberculosis merely by taking the sedimentation rate and other clinical methods, and that the mass examination of sputum is alone efficacious

Again, according to the clinical researches of the late Surgeon Captain Kobayashi and the studies of Surgeon Captain Kutsukaki from the standpoint of pathology, pleurisy in the Navy should more commonly occur in groups of men who are changing from a negative Mantoux reaction to a positive Mantoux reaction for the first time This opinion is supported by the fact that the authors found that, of the cases of pleurisy which they detected about 57 per cent had shown a negative Mantoux reaction about a year before they developed pleurisy

The authors find that, in Japan, the proportion of young men and children among the civilian population who contract pleurisy is not so high as that in the Army and Navy In connection with life in the Services the fact must not be overlooked that of the fourteen cases of pleurisy recorded, four of them (about 30 per cent. of the total) occurred while they were actually undergoing intensive training just after entry to the Service

The failure of the method of taking temperatures once a week, in detecting cases of pleurisy early, shows clearly that pleurisy develops very suddenly and acutely In the Navy, however, pleurisy does not occur immediately after an initial infection with tuberculosis, for it is found associated with tuberculosis (pulmonary) in various stages of development, so considerable doubt exists as to exactly when and how pleurisy breaks out

The next part of the paper is particularly involved

The authors appear to consider that persons undergoing exceptional nervous strain or intensive training during the period of rapid growth at puberty are liable to toxæmic reactions due to tubercular infection They consider that it is proved that all pleurisy in such cases is certainly of tubercular origin This opinion they have formed after studying the aspirated fluid from cases of pleural effusion

Further, they find that the main reason for cases of pleurisy occurring is the herding together of large numbers of recruits among whom are bound to be some cases of unsuspected pulmonary tubercle who are potential sources of infection to the others This is proved they claim, by the fact that the incidence of pleurisy decreased considerably as a result of their campaign to detect early cases of open pulmonary tuberculosis and to isolate these cases They re-emphasise here their opinion that intensive

service training lights up latent tuberculosis and hastens the spread of the disease

Final Conclusions by the Authors

(1) By means of Surgeon Commander Takada's method of mass examination of sputum, out of 834 ratings under ordinary training at the Naval Signal School five cases (0 6 per cent) of open tuberculosis were discovered This number is equal to 62 5 per cent of the total of eight cases of pulmonary tuberculosis which were returned during the period in which the investigation was carried out

(2) The age of the cases discovered varied from 18 to 23 years, the average age being 21 years

(3) All the cases showed early infiltration below the clavicle and in four of the cases cavitation had already commenced

(4) Physical signs in these cases were found to be in keeping with the X-ray photographs, but the temperature records and sedimentation rates were nearly normal

(5) The total number of temperature records taken was 24 375 but no more than two cases of pleurisy were discovered by this means, that is 20 per cent of the total number of cases of pleurisy returned during the period of the investigation

(6) Of the cases of pleurisy returned at the Naval Signal School during the year 1936, 66 7 per cent had shown a negative Mantoux reaction at the time of joining the school

(7) By means of the method of mass examination of sputum, the number of cases of pulmonary tuberculosis discovered in the year 1936 was double the number usually returned in an average year, and the incidence of pleurisy was reduced to about one-third of the number returned in an average year

(8) The authors, therefore claim that the methods described are successful in reducing the incidence of pulmonary tuberculosis and of pleurisy in places like the Naval Signal School where many young men undergoing intensive training are crowded together

(9) They are of the opinion that the pleurisy cases among the Naval ratings which they investigated were of tubercular origin and followed upon an initial infection with the tubercle bacillus

(10) They think that the progress of pleurisy can be checked by ordering absolute rest and taking steps to prevent the absorption of tubercular toxins

In closing this abstract I would like to tender my thanks to Lieutenant Commander C N R Barham for the many hours of patient toil in translating the article from the original Japanese As he was not familiar with many of the technical and medical terms and the standard dictionaries were not always helpful, it was a difficult task. This meant that frequent conferences between us were necessary

Lieutenant-Commander Barham made the noises represented by the Japanese ideographs, while I listened intently to try and pick out the phonetic rendering of the English scientific terms for which there was no Japanese word. Apart from these difficulties, such words as the 'sedimentation rate' are rendered as the 'falling down speed of red-blood cells,' which conveyed little to a translator unfamiliar with medical terms. Often the literal translation appeared to the translator to read as mere nonsense until the elementary facts of tubercular lesions were explained to him, and then he was able to find an alternative reading which made clear sense.

HIS MAJESTY'S NAVAL BASE, SINGAPORE—ITS MEDICAL ASPECTS

By Surgeon Commander David Duncan, M.D., D.P.H., R.N.

Introduction

Nine years service east of Suez carrying out work of a type which is rather without the normal sphere of the duties of a Naval Medical Officer, has prompted me to write a short treatise which may be of interest to Naval Medical Officers in general and of some value to those who are likely to be appointed to serve ashore in the tropics and in particular at Singapore.

My service in Singapore began in 1930, and I had the good fortune to serve with Surgeon Commander Given (now Surgeon Captain (Retired)) who from the inception of the Naval Base began his great anti-malarial campaign.

He worked from daylight till dark creeping through swamps on hands and knees, rearing different species of fish for devouring mosquito larvæ in streams, mixing different oils to discover the optimum film produced on the surface of water necessary for the destruction of larvæ identifying mosquitoes and their larvæ—discovering new entities, e.g. Givensis and Navalis, sleeping in an open mosquito net in the lonely jungle in order to trap mosquitoes for identification, sleeping in trees when darkness or fog prevented his finding his direction home, forgetting there was such a thing as lunch time, and indeed forgetting even more important engagements such as a dinner at Government House. He was doubted by the local entomologists when he asserted that he was not only going to rid the Base of Anopheline mosquitoes, but also of Culex and Stegomyia as well—the proof of that pudding is in the eating.

Such was the first hygienist and malariologist at the Naval Base, and he was my teacher in tropical hygiene and anti-malarial work here. Thus although my service in Singapore only dates back to 1930, I have had a very close association with the Naval Base from its beginning.

MEDICAL FACILITIES AFFORDED TO EMPLOYEES AT H.M. NAVAL BASE, SINGAPORE

(a) European Employees

The regulations governing these facilities are set out in A.F.O. 1141 and read, generally speaking, that all Admiralty employees and their dependants may receive free medical treatment as far as this provision is practicable by the Naval Medical Officers available—consideration always being given to the demands and exigencies of the Service.

Employees living at out stations and in Singapore town, fifteen or more miles from the base, appreciate that they cannot in every case reasonably expect the services of a Naval Medical Officer, and the services of a private practitioner must be elected.

Cases requiring hospital treatment are admitted either to Singapore or Johore General Hospital, but there is a possibility that when the United Services Hospital is completed Admiralty civil employees as well as Naval personnel might be conveniently accommodated on a repayment basis.

The dockyard surgery, when built apart from dealing with Admiralty and Naval attending cases, will have accommodation for a small number of bed-cases.

(b) Asiatic Employees

The Admiralty have agreed that their standards of conditions and principles shall not in any way fall beneath those demanded by the Local Government Ordinances. In many instances their standards are well above those required by these Ordinances.

An Asiatic hospital is provided on the site. There is accommodation for one hundred male Asiatic employees, a well fitted out laboratory, an operating theatre, dispensary, examination rooms and administrative offices.

An outdoor clinic for women and children completes the organization for the medical control of the Naval Base community. The average attendance ranges from fifty to seventy per day and there are from five to seventeen maternity cases per month. It is a significant fact that at the Singapore baby shows the Naval Base babies have taken their place well on the top of the list. To encourage mothers to feed and to look after their children properly annual baby shows were instituted at the Naval Base. The entries on some occasions amounted to 200 well fed and well cared for babies.

Since the Admiralty have assumed the entire responsibility for the health of the Base, it has been incumbent upon us to keep a close check on all Asiatics employed. As the number of these run into five figures, and the large proportion is employed by contractors who frequently change their labour force, the examination and recording of new entries to the Base is a very big undertaking indeed.

All new entries are examined by a medical officer and a careful record

is kept of particulars as to weight, height, age, splenic index, hæmoglobin index general physique heart and lung examinations, &c Rejections are usually made in cases of chronic malaria hookworm infections, poor physique, and evidence of chronic skin ulcerations Once a man is passed as fit he is registered, and given an identification card and is thus entitled to work on the Base

From the findings at the new entry medical examination something akin to a Service Medical History Sheet is initiated, and records are kept so that a complete medical history covering the period of the employee's service on the Base is always at hand

During 1937, 6,000 new entries and 5 000 re entries were medically examined Although these examinations and records have entailed much work and have at times become heart breakingly irksome, it is very evident that with such a large and fluctuating community it has aided in no small measure in keeping our sick list (including hurt list) in the region of 3 per thousand

The included charts show an interesting history of the Naval Base and the result of (*a*) judicious and thorough examination of new entries (*b*) a complete medical history, and individual attention to every man woman and child, (*c*) strict and constant preventive measures to combat epidemic diseases as malaria, typhoid typhus and the dysenteries

Anti-Malarial Control

This is a subject as profound as any branch of medicine The sick list charts show how in the early days of the Naval Base the sick list was dependent on the malaria rate. As time went on anti-malarial control extended over more and more of the Base, until in 1931 we find the temporary control practically complete and a comparatively malaria-free community From 1931 onwards (apart from the malaria epidemic of 1932) practically all cases recorded are freshly imported Asiatics, who were presumably suffering on entry from the disease in a latent form

In April 1932, without warning, what almost amounted to a catastrophe occurred The malaria rate shot up and within a period of four months we had recorded 1,000 cases At the peak of the outbreak there were 515 cases actually under treatment in the Naval Base Asiatic Hospital, and nearly 2,000 cases on the attending list The cause of the outbreak was soon evident *Anopheline Ludlowi* (Sudaicus) which are breeders in brackish water, and not usually important malaria carriers, had commenced to carry Not only had they become malaria-carriers, but their breeding rate was estimated at over 60,000,000 per female per forty days

With some hundreds of acres of swamp already cleared and now in the process of being filled, the control of *A Ludlowi* indeed appeared an insurmountable task

The details of the epidemic are very interesting from a malariologist's point of view, but are beyond the scope of this article I have, however

included photographs to show how the weight of a train tipping soil caused the floor of the swamp to belch upwards. The land-locked area being above high tide level cracked in the heart of summer. The trench so formed contained a small amount of sea water, which was soon diluted by rain to give the required salinity for the propagation of *A. Ludlowi*. There were a dozen trains continually tipping at different points of the swamp, and as each train produced either fresh cracks in old walled up areas, or raised up fresh areas, the difficulty with which one was confronted can scarcely be conceived.



[illegible] swamp filling.

The optimum [illegible] breeding of *A. Ludlowi* and the reasons why they should [illegible] malaria carriers are not yet quite understood. [illegible] malaria epidemics in [illegible] in Malaya have [illegible] the subject, and in [illegible] that any work in swamp [illegible] way of clearing of undergrowth filling (especially with [illegible] such as occurs in Malaya) may interference with [illegible] creates conditions favourable to the breeding [illegible] outbreak in Port Swettenham's [illegible] history and it will [illegible] that this magnificent harbour had [illegible] closed down with [illegible] complication. The Geylang outbreak occurring as [illegible] reclamation work for the Singapore Air Port [illegible] outbreak at the Naval Base was still fresh in the memories of the [illegible] that despite the lessons learnt and all precautions which [illegible] this outbreak assumed proportions which may be regarded [illegible] of the worst outbreaks in Malaya.

cc

Sir Malcolm Watson to whom credit is due for planning the anti-malarial measures in Malaya twenty-five years ahead of any other country in the world, said in a recent address that, if constant vigilance were relaxed to any degree Malaya would become a malaria ridden country, and even His Majesty's Naval Base would have to be closed down

Rubber planters, tin miners, and commercial firms in general, as well as the local Health Authorities, are too well aware of the ravages and economic distress which can be caused by malaria to relax or to ignore that necessary vigilance It is gratifying to know that with the present progress of permanent anti-malarial work on the Base the possibility of a



Temporary anti-malarial work—open earth drain

malarial outbreak of any significance should be very remote The more permanent anti malarial work which is carried out the more easy will it be to prevent or to check an outbreak arising from within the Admiralty boundaries

There are three main methods of control of malarial infection (*a*) preventing the infection by mosquitoes with prophylactic drugs as quinine atebrin &c This form of control may have a future, but as yet there is no concrete evidence to show that the daily dose of quinine or any synthetic drug is a sure preventive In this connection I would recall the incidence and mortality of cases of malaria occurring among ratings on their return to the United Kingdom who had been given their daily

quinine throughout their commission in West African gun boats. In these cases the malaria was held latent until irreparable damage was done. (*b*) Preventing the access of mosquitoes by mosquito nets, mosquito-proof rooms &c. This method is widely used in semi-controlled areas in Malaya. Although mosquito proof rooms were built on the Naval Base over ten years ago, I do not think they have ever been used as such. Mosquito nets are used by a large proportion of residents but these are mainly to prevent disturbance by domestic mosquitos, moths, sand flies and other insects. (*c*) Preventing the breeding of malaria carrying mosquitoes. As far as we are concerned on the Naval Base this is our means of control. With over 8 square miles of swamp, rubber plantations





[illegible]

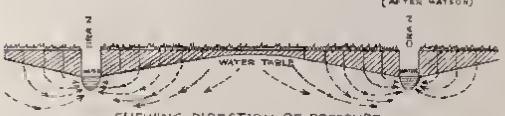
and jungle with their ideal breeding grounds [illegible] *A. umbrosus* &c., it has been a long and [illegible] little by little under strict control.

At present much of the area is still under temporary control. By temporary control I mean the prevention of mosquito breeding by the digging, maintaining and oiling of open earth drains. By this method all surface water, springs and seepages are collected into channels where the prevention of breeding is much simplified. At present some 2,000 gallons

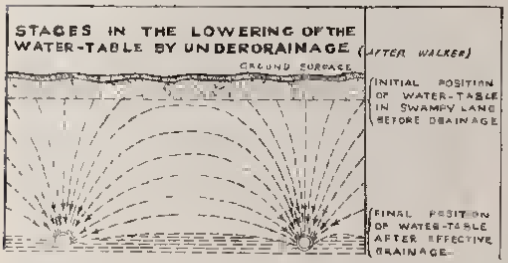
of oil are sprayed along these drains every month This temporary control is not only expensive, but the danger of any relaxation of the vigilance, which Sir Malcolm Watson emphasized, has urged us to push forward permanent work

The main object of permanent anti-malarial work is to get rid of all surface springs seepages, &c Here subsoil drainage is carried out, the area being drained dry and the water carried through by means of

DIAGRAM SHOWING THE DIRECTION OF PRESSURE AND LINES OF MOVEMENT OF WATER IN DRAINED LAND (AFTER WATSON)



SHEWING DIRECTION OF PRESSURE



subsoil agricultural pipes Subsoil drainage is most important in anti-malarial work In effect it lowers the level of the subsoil water as well as tapping springs and seepages before they reach the surface It is a unit quite distinct from surface water drainage, but it is to be remembered that a well drained soil can absorb surface or storm water to such an extent that surface channels may not be required Two feet of 70 per cent porous soil can deal with about 10 in of rainfall The result of subsoil drainage on the level of subsoil water is shown diagrammatically It will be seen that if these pipes are laid at proper depths and proper intervals according to the type of the soil a considerable depth of dry well drained soil

is availal le to absorb any rainfall Whilst subsoil drainage provides a measure of drying up ravines and generally lowering the subsoil water level the same result can be obtained by filling up these ravines or swamps with earth This measure has been carried out extensively on the Base, not so much as an anti-malarial measure but to afford acres square miles even, of reclamation for buildings playing fields, &c

Hygiene and Preventive Medicine

The health measures necessary in towns of a population of over 10,000 form a considerable problem If that town is situated in the tropics the difficulties presented become greater If the population of that town is Asiatic, i e Chinese (Hailam Hokien Cantonese, Shanghai, Teochew Haka and Straits-born) Indian (Tamils, Malabarees Sikhs and Bengalies) Javanese and Malay, the problem becomes even greater still

In a population such as ours the strictest measures have to be taken if one is to keep one's finger on the pulse of the community Even with temporary coolie lines we must attempt to adhere to a scheme of housing and town planning Type of coolie lines, spacing of lines the cubic space per individual or per family the siting and structure of kitchens, bath places and latrines, are all important not only in preventing an outbreak of disease, but to facilitate the control of an epidemic if such eventuality should arise Even in the case of very temporary lines for contractor's coolies the site is inspected and the plans are scrutinized

Although each case is considered on its merits the standards aimed at are roughly as follows

Coolie Line—(1) Raised off the ground (2) Fitted with windows that open and give through ventilation (3) Fitted with sleeping benches (4) Concreted beneath with surrounding invert drains (In certain cases according to site and nature of soil and where a messing shed is provided it may not be necessary to concrete underneath the line) (5) No sleeping cubicles or shops may be built beneath the lines Where the contractor wishes to provide a shop for his coolies a separate building must be erected

Wash Place—(1) Concrete floor surrounded by invert drain or ridge 4 in high with one outlet (2) Cement trough with water laid on from the main

Latrines—(1) Bore holes—cement floor surrounded by pre-cast inverts (2) Roof to be built so as to keep out as much sunlight as possible 5 to 10 per 100 coolies are required according to type of soil and length of contract (See under)

Kitchen—(1) Concrete floor—invert drain surrounding (2) Cement water trough with water laid on

Water Supply—An adequate supply of taps or stand-pipes with due consideration to numbers of coolies of different nationalities

Incinerator—Every contractor is required to provide an incinerator—brick with corrugated iron roof—unless his lines are so sited that the



Native quarters but showing the conditions under which the coolie class live



Hospital for [illegible] provided by the Japanese at H.M. Naval Base

Administration [illegible] is [illegible] carried Consideration is always given to the length of the contract and to the type and numbers of labour force employed For instance, in a small short contract, one cannot with reason expect to obtain the same standard of buildings and facilities as one would demand of a larger (probably two or three years) contract

Thus the Health Authorities must whilst giving due consideration to health and sanitation principles still bear in mind the costs which are being incurred by a firm carrying out a contract on a purely commercial basis After the coolie line is sited built and occupied the responsibility of the Health Authorities has not finished An average coolie line is built to accommodate about 100 unmarried, or 25 to 30 married, Asiatics As there are several hundreds of these blocks occupied on the Base, the amount of supervision required as regards drainage sweeping incineration and general sanitary control may be conceived

Bore hole Latrines—Before leaving the subject of hygiene a few remarks on bore hole latrines may not be out of place In Malaya as in many other tropical countries where typhoid and dysentery are endemic it is illegal to use night soil in vegetable gardens It is a well known fact that vegetables treated with night soil have a most luxuriant growth and I am informed that the flavour approximates that of well-frosted Brussel sprouts To the Chinese latrine cleaner, if bucket closets were used, there would be a definite temptation to carry home a few buckets for the vegetable garden and this was very evident when I was informed by the Health Authorities Singapore that vegetables grown in the vicinity of the Naval Base were realizing prices beyond any other on the island of Singapore Bore-hole latrines had been found effective for many years previously at the Naval Base, but it was not until 1915 when I was faced with the danger of wholesale use of night-soil in the growing of vegetables in the vicinity of the Base, that I decided to use nothing but bore-holes for temporary coolie lines It is a significant fact that the value of night soil rose from 30 to 50 cents per bucket, when some 800 bore holes had replaced bucket latrines

Bore holes are put down by means of an auger measuring 15 to 20 in in diameter The earth is scooped out to a depth of 15 to 20 ft according to the type of soil, and level of the subsoil water table The hole is then covered over by a concrete slab which has an aperture about 15 by 9 in The size of this aperture is very important for if it is too small there is fouling of the sides by excreta and if it is too large light gains access and flies may find a breeding ground For this latter reason it is important that the roof of the building should not admit direct sun rays Bore-holes properly designed and properly used, are entirely free from smell and flies and should remain effective for several years In a short contract of about one year it has been found adequate to put down bore-holes at the rate of 5 per cent whilst for longer contracts 10 per cent are put down so that 5 per cent can be in use whilst 5 per cent are resting The biological

action in a bore-hole is similar to that which occurs in a septic tank, the fæcal and other matter after digestion filtrating away through the soil.

As contractors, eager to get on with their contract frequently built and occupied their lines before attempting to construct latrines, &c., we found it more satisfactory to put down their bore holes whenever they commenced to build their lines. Although this necessitated the purchase of additional augers and extra staff being employed by the Medical Department it is considered that the epidemic safety margin is thus provided for, and the continual struggle with contractors, the waste of paper and time and the fraying of the nerves of the Health Officer have been eliminated.

I would refer to the Sick List Chart of 1929, where a short sharp dysentery outbreak is represented. There was a total of 137 cases. This outbreak which might have developed into a very serious one, was caused through a sub-contractor occupying coolie lines before suitable latrine accommodation was available. All permanent coolie lines will be provided with a water carriage system.

Educational Facilities at Singapore.

There are schools in Singapore town, but I am of the opinion that the average child cannot undertake a daily double journey of fifteen miles of very twisting roads from the Base without there being, in this climate, a deleterious effect on the constitution. The provision of a European school on the Base has been negatived by the general medical opinion that no child of school age should live in Singapore, and any offer of educational facilities would encourage, rather than discourage, the bringing out of children of that age.

There is a school for Asiatics on the Base. It teaches English to Tamils, Sikhs, Bengalies, Chinese, Malays and Javanese. It is anticipated that by thus providing educational facilities we will eventually have youths fit to carry out on the Base types of work which require a certain standard of education.

There is a school for European children at Cameron Highlands. The school appears to be very well administered, and, although only recently opened, has about seventy pupils ranging in age from 4 to 12 years. As Cameron Highlands is about 5,000 feet above sea-level, the climatic conditions are very different from those obtained in Singapore. There is a very good school at Brastagi in Northern Sumatra. It is forty-eight miles from Medan which is about two nights voyage by steamer from Singapore. The climate here is ideal for children having a low rain-fall (60 inches), no mists, and nearly twice as many hours of sunshine as the average hill station. It is about 4,000 feet above sea level. Provided they can afford the cost, these two schools should prove a boon to parents, who are torn between leaving their children at home or bringing them to live in Singapore, where, I will again emphasize, there is a grave risk of the child's being adversely affected by the climatic conditions.

Climate

Huntington (“Civilisation and Climate” 1924) has pointed out that scientific maps of the world showing (*a*) degrees of good health based on mortality, longevity, &c., (*b*) civilisation based on wealth educational facilities, &c. (*c*) energy, deduced from factory and other business statistics, are all, when correlated, practically identical. There is no doubt that climate is the dominating and controlling factor. Huntington’s map, which is included, shows the distribution of human energy and you will see at once that Singapore is in the “very low” category. That this chart



is a true representation has been verified by Health Authorities, who have spent as long as twenty to thirty years in Malaya.

It has been noted on the Naval Base that for any period short of two and a half years, men, women and children in general are particularly fit. After that period there is a marked drop in health and energy. Children become pasty and lackadaisical—they are not necessarily ill, but they have lost that liveliness which denotes a fit child. Women become neurotic, take little interest in their domestic duties outdoor games, or even entertainments and amusements. Men continue to do their work but they are becoming less and less efficient. They are weary, their memory is poor, their work becomes routine or mechanical and lacks that

spirit which is essential to make for efficiency. Whilst it is difficult to estimate degrees of efficiency, I am convinced that 75 per cent of employees who work in Singapore for three years without leave are about 50 per cent efficient. Youths who come out for the first time at the age of 18 or 19 years can accommodate themselves much better to the conditions so that in civil life in Singapore one may meet people who have lived here for 20 or even 30 years, with breaks for leave periods every four or five years. After the age of 30 this power of accommodation becomes less and less, and there is evidence which proves that the Admiralty employees, who are sent out to Singapore at the age of 45 or 50 probably to do their first tour in the tropics, are inefficient in a very much shorter period. Servants of the Sudan and West African Governments have leave every eighteen months to two years—not because of the prevalence of tropical diseases in those regions, but because of the effect of the climate on the individual physically and mentally.

Whilst one can give concrete examples of physical "damage" in the tropics e.g. menopausal disturbances before the age of 40, menstruation and evidence of puberty as early as the age of 9 or 10, presbyopia and senile cataract before the age of 40, it is much more difficult to measure mental deterioration. There is little doubt that service in the tropics affects the mind to a greater extent than the physique. I have frequently seen strong, robust men crying in the surgery—not because of their lumbago or their toothache, but because of the effect of the climate on their "nerves."

Black (*Malayan Medical Journal* December, 1932) has pointed out that the crude suicide rate in Malaya per million per year for eight years is 137 for all races and 239 for Europeans. He has also pointed out as a result of a life-time medical experience in Malaya, that a tour of three years should be the maximum, if it is desired to conserve efficiency, mental equilibrium and alertness. In case these truths are misapprehended, I would add that the climate of Singapore with its green trees, grass and flowers is very delightful indeed. It is the monotony of the climate, monotony of environment, perpetual summer temperature day and night all the year round and high humidity, which produce the 'Nerves' and "Low Energy Index." I have only tried to point out that a prolonged stay is deleterious to man, woman and child, more so mentally than physically and more so in adolescence and in those over 40.

Hill Stations.

The question arises as to what provision we have made to combat the climatic conditions which produce this very low energy index in Singapore. There are many Dutch Hill Stations in Java and Sumatra, but expense and time taken up in travelling have ruled these out except to the select few. There are two small hill stations in Malaya which have been developed to the full, but because of their topography, any further expansion is not practicable. Fraser's Hill, the larger of these two, is a delightful

spot, about 4,000 feet above sea level, and only about [illegible] miles from Singapore. This station has been used a good deal by Admiralty officials but accommodation is always very limited.

Cameron Highlands, a third hill station 100 miles from Singapore and about 5,000 feet above sea level, is now being opened up, and as the services have obtained an area of 100 acres for development as a sanatorium and rest camp, a detailed description of the Highlands may not be out of place. This station has an equable climate with sufficient rainfall, a mean relative humidity approximating 80 per cent., and several hours sunshine daily, with a temperature which permits of healthy and even strenuous exercise throughout the day time and with cool or cold nights. These attributes fulfil the demands of a change of air station in the tropics.

The central mountain range of Malaya throws out a spur almost at right angles running eastwards. Twenty miles farther south the central range itself turns east for a few miles before resuming its southern course. Valleys running in from three sides of a rough square form this ideal area for a hill station. Over forty miles of good road have been built to give access from Tapah Road—the nearest railway station. This road is a triumph of modern engineering, is the finest scenic highway in Malaya and is unsurpassed in jungle and mountain scenery. In addition to this access road there are 40 miles of road and 100 miles of bridle paths already constructed on the Highlands. The average maximum temperature at Cameron Highlands is 72° F. and the average minimum is 56° F. The lowest temperature on record is 42° F. The average annual rainfall is just over 100 in. The atmosphere is dry and bracing and the encircling mountains protect the Highlands from the mists which are so prevalent on other hill stations. It has the advantages of Nuwara Eliya—Ceylon's premier hill station—without the disadvantages of a high humidity during both monsoons which renders Nawara Eliya a poor resort for invalids for many months of the year.

Recreational facilities at this early stage of development are naturally limited. A very good nine hole golf course was completed and opened towards the end of 1936. The course measures 2,981 yards and has cost something in the region of £1,000. There are two children's playgrounds and a large football field. The extent of the recreational footpaths have already been mentioned, and the surrounding heights invite exploration to see what lies beyond. There are two hotels, and a small inn is under construction. There are completed at present in the upper Highlands about 20 bungalows—all privately owned, mostly by commercial firms for the use of their employees. Some 300 sites suitable for building have been surveyed and marked out. Many thousands of trout ova, chiefly rainbow, have been imported, hatched locally, and used to stock the upper reaches of rivers. As some of these trout are now over one pound in weight, it is anticipated that trout fishing will shortly be available. As further development proceeds at the Highlands recreational facilities will be increased accordingly. The Services will have to provide playing fields and means of

recreation for their ranks and ratings although this will probably necessitate the procuring of more land Invalids or patients convalescing will obtain the rest, change of air, and pleasant environment although they may be unable to take advantage of the recreational facilities

An Experimental Plantation, run by the Agricultural Department, has done extensive work in carrying out experiments in the growing of tea, coffee, cinchona, apples, cherries, and citrous fruit The prospect of tea growing would appear to be a good one and its growth on the steep hill slopes is equal to that of Ceylon Already many hundreds of acres have been taken up for that purpose Citrous fruits, as grape fruits &c, seem to have done particularly well, whilst cinchona flourishes in the unfelled jungle

Although a good deal of the land freshly reclaimed from jungle is peaty and too acid, horticulturists have proved that by working and exposing the land to the oxidizing effect of the sun and air with or without, the burying of cover crops which introduces the essential compounds of nitrogen, the Highlands can be self-supporting in the matter of vegetables and cattle fodder The many valleys are rich in humus which has been washed down from the slopes by rain There are already large areas of land taken up for the cultivation of fruits and vegetables Cabbages, lettuce, spring onions, radishes, asparagus, strawberries, tomatoes, and several other fresh foods unobtainable in Singapore, are produced in quantity There is a dairy farm stocked mainly by Ayrshires imported from Melbourne This farm is capable of expansion to produce fresh milk, butter, and cream for a very large population

Whilst the conditions are suitable for rearing stock to produce fresh beef, it is considered that stock for mutton would not be a good proposition in a region with a rainfall of 100 in This has been confirmed by experiments carried out in the Dutch East Indies

Conditions are favourable for the breeding of Malaya's most dangerous malaria carrier—*A. maculatus* The influence of altitudes and temperature on malaria incidence is not yet fully understood and the theory that malaria disappears at the 3 000 to 4,000 feet level has its exceptions Fraser's Hill in Malaya, Brastagi in Sumatra Diyatalawa and Newera Eliya in Ceylon and most hill stations in India are free from malaria At some stations in Africa over 5 000 ft and in Italy at nearly 7,000 ft over sea level, malaria is endemic The absence of malaria is not necessarily due to the absence of anopheline mosquitoes and probably not even to the fact that climatic conditions may be unfavourable for the development of the malarial parasite With judicious anti malarial measures during the development of the Highlands the risk of endemic malaria should be entirely eliminated

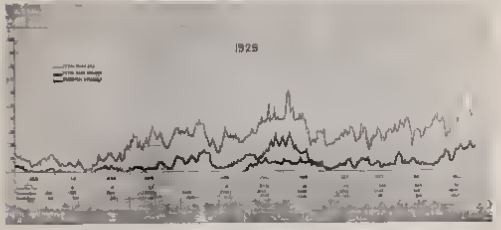
Water Supply

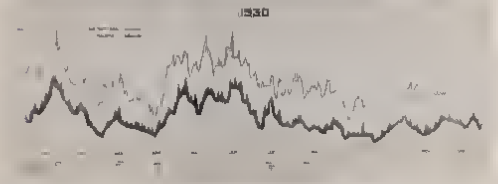
From the Bartram River an adequate supply is available for a population of over 10,000 There are other tributaries which may be utilized if the population of the Highlands should ever exceed that figure It is to

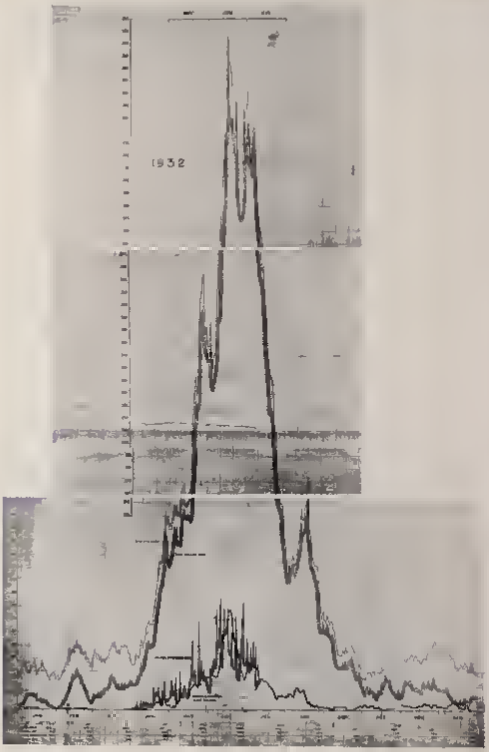
be noted that on the Naval Base the final water supply from reclaimed valleys formerly under jungle has been little more than half the original estimate The loss of water is accounted for by evaporation on land exposed to the sun, and to loss of water retaining properties in areas drained for building sites Any such reduction here should not, however, affect the essential service for drinking, domestic use, sanitation recreational bathing, and power for electricity

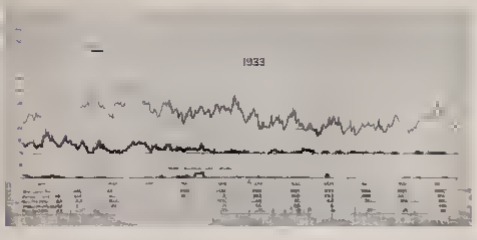
I would appear to have gone into unnecessary detail with regard to Cameron Highlands, but the need for this station has urged me to emphasize its advantages This need will be accentuated if for any reason Wei hai wei cannot be used in the summer months by the China Fleet At the Naval Base alone during 1937 2½ per cent of the European personnel have been invalided to the United Kingdom 4½ per cent of the invaliding were directly due to the climatic conditions

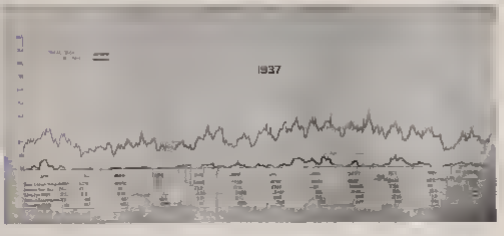
In conclusion although I have only touched on a few of the points of medical interest of the Singapore Naval Base there is a mine of experience and a mine of knowledge available for medical officers who are keen on either medicine surgery, bacteriology, hygiene malariology or general organization and administration






1932





These charts showing daily total numbers of cases sick (including I units) and daily total number of cases of malaria under treatment in the Naval Base Anti-Malaria Hospital during the last nine years are self explanatory.

In the 1929 chart a heavy dark line (just readily distinguishable here from the Falciparum malaria) represents a small outbreak of dysentery in July and August of that year.

A third line appearing in the charts of 1933 and 1935 represents the incidence of malaria amongst women and children for those years.

In the 1930 chart the total sick curve is seen to be determined by the malaria incidence whilst in later years when the whole Naval Base area came under anti-malaria control, this is not so.

The 1933 chart records the malarial epidemic referred to in the text.

In 1936 and 1937 charts depict the low rate of sickness with almost complete absence of malaria although the numbers of the Malaya force have steadily increased.

Clinical Notes

A CASE OF APHASIA

[redacted] × Lieutenant C. D. COODE, M.B., R.N.

This case presented itself in a rather amusing way, the duty S.B.P.O. calling in the Medical Officer because, after quarter of an hour spent in endeavouring to obtain a history, he had to admit to himself that there was something wrong with the patient's speech.

The history given below is for simplicity's sake not that obtained at the time, but a more comprehensive one pieced together later, and using several sources, including statements by the (recovered) patient.

Patient. G.O., aged 18, able seaman.

History.—On the morning of June 5, 1939, woke up perfectly fit and turned out as usual. Was in perfectly normal health all day and did his ordinary part of ship duties. He occasionally had headaches but these had up to date never been severe nor had they worried him at all. At about 17.00 a vague headache came on, and this was apparently bi-frontal and not severe. At 17.45 he was writing a letter as he put it later, trying to write a letter. He is emphatic that he knew exactly what he wanted to write but to his surprise he found that he could not write properly, as the wrong letters came on the paper. Not all the letters were wrong but one or two wrong ones might crop up in each word. Later he found that his speech was affected slightly in the same way. He was quite clear as to what he wanted to say but occasionally a wrong word would come out. He is vague about details in this period but it appears certain that from 18.00 onwards the headache was increasing in severity so that he took less notice of other symptoms. About 20.30 he realised that something definitely had gone wrong. His headache was bad, still bi-frontal and heaving in character and his speech was definitely wrong. He therefore reported to the Sick Bay at 20.45, where his first act was to produce a copious vomit. This vomit had no unexpected characteristics and was preceded by nausea. It was at this juncture that the S.B.P.O., ignoring the limitations of the aphasic patient, exhausted his own vocabulary, not to mention that of the sufferer, in an attempt to get a history. The patient was then seen by the Medical Officer at 21.00. He obviously understood questions and was capable of answering "Yes" or "No". However, established this important fact the Medical Officer had to elicit all information by putting questions capable of being answered by a direct negative or affirmative. As might be expected this did not produce a full history, but the resulting information was as follows:

By this means the patient admitted that he had had a bad headache since 20.30. He realised that his memory and speech were wrong and unpleasant to himself even at the time. There was no history of previous vomiting, no history of visual disturbance, no fits, no head injury and no recent illness or accident. Those facts were checked four days later and are apparently correct. It is interesting to note, however, that his memory was at this time unimpaired. For instance he denied having any previous headache prior to 20.30. Five days later he was quite clear as to the existence of headache from 17.00 hours and also as to the occurrence of occasional vague headaches in the past.

Previous health: Nothing of importance. Family history: Father, mother and one brother alive and well. No history of fits nor of mental trouble. Habits: Had been in the sun a lot during the previous week.

[illegible] abnormal physical signs were found in the cardio vascular, [illegible] digestive systems

Central Nervous System.—Notes began.—"Had a well marked motor aphasia. This was investigated under the following heads and the remarks made are given below.

(1) Mentality: At first could not give his name Christian name, age, address father's occupation, nor give a history. This was corroborated by the S.B.O. This appeared to be due partly to failure of memory, and partly to aphasia.

He remembered his own names first. Then, after sitting with knitted brows and rubbing his forehead with his fists he produced his age. His home address caused similar difficulty. He produced the name of the street and the village. Also the county. The name of the nearest town as given in the full postal address on his M.H.S. he failed to produce. He also failed to produce his father's occupation. According to the S.B.O. he was all the time slightly improving and giving more information than when first seen.

(2) Speech. On attempting to answer questions, e.g. 'Where do you live?' simple words such as 'I live in—' were said, then there would be a pause followed by a jumble of words and sounds. He would then nudge the forehead and try again. After one or two failures he would sigh, and give up trying. In this disjointed speech words would be jumbled, and syllables would be jumbled. Sometimes the wrong syllable would come out and spoil an otherwise correct word. Sometimes also completely irrelevant words would crop up in sentences. For instance.—'I live in— followed by jargon and suddenly "Tribal smasthead." Often the second or third tries at answering were better than the first, and even intelligible. In this way he produced his name and address. When asked if he understood the questions and if he knew what he wanted to say he replied "Yes." He could thus use very simple words sometimes perhaps after one or two tries, but was incapable of expressing ordinary ideas by speech.

(3) Writing. Here he failed to convey ideas way better than he could by mouth. He was asked to write his name. The surname came correctly but slowly. His first name "George" he failed to spell. Three letters came out correctly, then a "w," then a "y." Letters themselves were perfect however he obviously knew that the word was misspelt. When asked to write down his job he wrote "D.A.s." The missing word was obviously 'mate' and when this was suggested to him he agreed, and then failed to write it.

(4) Reading. Could read most letters. Called "m" "y." Could not read words. Having been asked to read from a novel, he produced similar jargon to that described above. He was next tried on the ship's daily orders. Again he could name the letters, usually correctly but not pronounce words. He appeared to know the significance of the daily orders, for instance "heads to dinner" "up spirits" and so on. Later (June 9), when questioned, he said that he had in fact understood all questions and had also understood the meaning of every thing he had been asked to read, and the significance of everything he had been asked to write. He stated that he knew at the time that he was reading that his speech was nonsensical. In fact the words "wouldn't come right" any more than the letter he was trying to write came right.

(5) Emotions. Somewhat worried about himself. Otherwise his emotions appeared perfectly normal.

Cranial Nerves. (1) Not tested. (2) No papilloedema. (3, 4, 6) Pupils equal, regular and central. React to light and on accommodation. Nystagmus. Very slight both sides, on full external rotation of eyeball. (5) No sensory change detected. (7) No paresis. (8) No aural discharge. Drums normal. (9, 10, 11) Palate moves symmetrically. No anaesthesia. (12) Tongue protrudes slightly to left from facial asymmetry. Very fine tremor of tip.

Limbs. Fine tremor of outstretched hands. Tone good. Muscular power

good and equal in opposite limbs No involuntary movements No sensory change detected

Tendon Reflexes All very brisk and equal on opposite sides This included triceps, biceps, supinator, ankle and knee-jerks Knee jerks in particular were very brisk, and there was a suggestion of clonus on the left side Abdominal reflexes were all just present

The condition was obviously one of motor aphasia

Progress.—As the ship was due to sail early next morning, and in view of the possible aetiology of this condition, patient was next moved to *Maine*, then in company

At 21 45, when the patient was seen by the S M O speech and mental functions were improving This improvement was even more marked on reaching *Maine* at 23 15 Here he was only just aphasic however visible evidence of his former plight was provided by the patient's specimen headwriting (and attempts to write his own name) done in *Barham* some two hours previously He now complained of severe bursting headache and wished, so the writer understands, to be allowed to go to sleep Before going to sleep he noticed cramp in the right arm After this he then slept soundly and on waking in the morning all symptoms had vanished *Maine* returned him to duty on June 9 He was then perfectly normal clinically and was able to corroborate many facts of which one had hitherto been uncertain

Apparently no special investigations were carried out and the hospital ship's diagnosis was "migraine"

Discussion.—This case was interesting in several ways, first, because of its comparative rarity secondly because it afforded an all too rare opportunity of practising aphasic history taking and clinical examination of a "C N S" case I will not again stress the importance of establishing and recording any objective evidence bearing on a patient's condition At the present time the only convincing evidence that this man really was once aphasic is the scrap of paper on which is recorded his rather pathetic attempt to write his own name and occupation correctly Fourth interest lies in the diagnosis

One would not I think quarrel with the hospital diagnosis On occasions of this sort textbooks never seem very helpful The speed of recovery and its completeness would seem to rule out any organic condition, while the nature of the symptoms points to a vascular origin Presumably the theory is that the patient had a mild cerebral condition is migraine, and that on this occasion, a small branch of the left middle cerebral artery went into spasm This spasm passed off in the course of some dozen hours Altogether a theory that holds water, but somehow not entirely convincing partly because no system of investigation was pursued One feels that one does not feel justified in prying too much into the diagnosis of a case in which information available as to the state of the cerebrospinal fluid

[illegible] interesting and greatest, interest to the mind of the writer, and one which should be followed up irrespective of diagnosis is the insight this case gives [illegible] working of the cerebral cortex and the localization of function thereon

In clinical practice most aphasias are of mixed type There are sensory and motor [illegible] For instance not only is speech unintelligible, but the patient [illegible] In direct contrast to this case, fails to understand some or all of verbal [illegible] communication He, therefore fails to recognize mistakes in his own [illegible] or writing Sensory aphasia alone is fairly common Pure motor aphasia such as occurred here is rare The reason for this is probably that most aphasias have an organic cause For instance a tumour in the left parietal region Here the upset within the cranium apart from in the cerebrum is pretty [illegible] Apart from interference with speech by affection of the sensory part of the generation, the oedema surrounding a moderate tumour is alone enough to disturb the function of comparatively distant cortical areas In this

pre-rolandic cortex [illegible] small and [illegible] pre-frontal cortex [illegible] of action. With [illegible] such a localization.

The classification [illegible] confused. In the power [illegible] say that the patient [illegible] motor aphasia. Such [illegible] belief in Broca's much [illegible] limitation of the cortex [illegible] clinical excesses some [illegible]

Another standpoint [illegible] clinical experience, but [illegible] correlate with anatomic [illegible] this case. There is the difficulty [illegible] errors and difficult writing. [illegible] none at all. This form of [illegible] and agraphia according to some [illegible] specialized variety of aphasia.

Another view is that of [illegible] extreme from the anatomical theories [illegible] writing are spread over a wide [illegible] lobes and gyri are cataloged as [illegible] whole the evidence in favor of [illegible] speculative and, by comparison with [illegible] in segments as worked out by [illegible] to be readily receptible. The [illegible] belief that fairly small areas of the [illegible] fenetrus.

Lastly there is the view [illegible] is subcortical.

Reviewing the above theories [illegible] described as cerebral aphasia.

Anatomically it seems [illegible] with speech lies in or near the [illegible] motor centre for the face at [illegible] to imagine that the fronto-[illegible] cortex not far from the motor [illegible] inhibitory to this case a spasm of [illegible] cerebral artery which supplies [illegible] all the resultant symptoms.

The inferior lateral frontal [illegible] of the inferior frontal lobe and [illegible] one affected.

More often meets with the [illegible] cerebral vascular spasms is the [illegible] as migraine. According to Spitzer's [illegible] of the brain post mortem [illegible] the real lesion.

So one falls between two stools. [illegible] by aphasia though rare [illegible] would explain the phenomena [illegible] junctures that such spasm can be [illegible] most beginners to cause muscular [illegible] reader but before dropping the [illegible] matters which have to be considered [illegible] organic in the past. Such pains have [illegible] of migraine. The second is the slight [illegible] undoubtedly present when the [illegible]

[illegible]vious [illegible]n words The cudgelling of the patient's brow give some hint of it [illegible]tho the fact that he dated the onset of his troubles wrongly when first seen After recovery he dated the onset of his headaches from 17 00 while, when seen, he gave 20 30 as the time of onset in response to very thorough questioning

Does this signify that an area of the adjacent frontal cortex, then out of action is to some extent concerned with memory?

TWO CASES OF MULTIPLE INFECTIONS

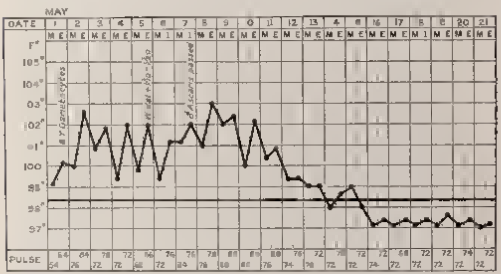
By Surgeon Lieutenant Commander HUGH WILLOUGHBY D P H D T M & H R N V R

The following cases are reported as being unusual multiple infections

Case I.—Fozil M aged 46 native Seacunny admitted to hospital May 1 1939 as a P U O ex S S *Clan*—

Previous History.—First reported sick on April 25 1939, though he had been off colour for some time previously No doctor was carried in the ship and being a native Indian patient spoke indifferent English

History obtained from Master of the vessel gave a six day history of fever varying from 99° to 103° F, obstinate constipation relieved by cl rrhœa, heavy sweats and vague abdominal pains.



Condition on Admission.—Temperature 99 2° F, pulse 54 per min slightly bronchial respirations 16 per minute Patient looked ill with anxious facies, and complained of severe frontal headache No rash observed Spleen enlarged two fingers breadth below left costal margin Abdominal distension marked Skin clammy The evening temperature of the same day was 100 2° F with pulse rate 64 and a blood film was taken On examination benign tertian gametocytes and all sporulating bodies were found Patient was given atebrin and quinine treatment

Further Progress.—After four days on atebrin and quinine the temperature showed no response and the condition of the patient showed no improvement Benign tertian parasites having been demonstrated in the blood, it appeared evident finally that the temperature remained elevated under medication of atebrin

this latter [illegible] and [illegible] The slow pulse [illegible] and the high temperature offered a clue, and accordingly a Widal [illegible] This was returned positive up to a titre of 1 120 for *B typhosus*

The diagnosis was now established as typhoid fever and [illegible] malaria

Recovery was uneventful except that at the end of the first week the [illegible] passed an adult male Ascaris worm

Conclusions.—From the appearance of the chart I formed the opinion [illegible] patient was probably a mild typhoid about the beginning of the third week [illegible] disease on admission to hospital Atebrin and quinine did not appear [illegible] the typhoid condition

I append the temperature chart for this case reproduced as nearly [illegible] evening temperatures for simplicity The patient was discharged cured on June 1939, after three negative cultures of both stool and urine

Case 2.—T A B, aged 15 Boy under training Admitted to hospital May 1939, as a case of varicella of one day duration

History of Case.—Patient was duty boy at sick quarters of a training ship on duty he had performed for the previous three weeks Fourteen days previously there had occurred a case of varicella in the ship which T A B had come in contact with in the Sick Quarters

On admission the case was a straightforward one of varicella temperature 102° F, rash well out on the 'glass pox' stage, with typical spots and distribution By p.m. on May 11 (two days after admission) the temperature fell to normal and never rose above normality again

That evening, however the patient complained of feeling sick, but did not vomit and had an erythematous rash on the face and body and a well marked circum oral pallor His throat was injected but not sore, and his tongue was clean With some hesitancy, I ventured to add scarlet fever to my original diagnosis which was amply confirmed later, by profuse peeling in the patient and further cases of scarlet fever in the ship

On May 16 the Ward Sister called my attention to a curious rash on the patient's chest which by that evening had spread all over him I was extremely diffident about applying a label to this rash although it was typically morbilliform and I found one or two indigo Koplik's spots on close examination of the mouth There was a complete absence of coryza and the boy did not feel ill By next day May 17, I got over my diffidence about adding morbilli to the diagnosis of varicella and scarlet fever as three cases of straightforward morbilli arrived from the same ship! Luckily the patient was nursed in a cubicle all the time so cross infection of others was avoided

This case is noteworthy, not only as a triple infection but in view of the descending order of magnitude of the symptoms accompanying the rashes of each disease

The rashes were perfect textbook examples in each case, the maculae &c of the early stages of varicella was present in the measles but not the vomiting, or the sore throat in the scarlet fever and finally in the morbilli only two possible Koplik's spots and no coryza The complete absence of elevation of temperature —even temporarily—was remarkable in the onset of both the scarlet fever and the morbilli

The patient was discharged cured, after normal recovery from all three diseases, on June 10, 1939

TWO CASES OF TYPHUS FEVER

By SURGEON-CAPTAIN H. CLEAVE, M.R.C.P., R.N.

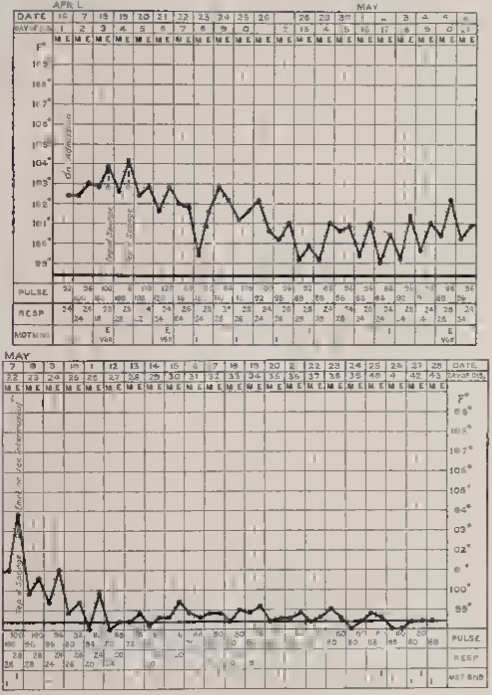
A Malay steward, H.M.S. *Newcastle*, aged 35, suffered for two days from malaise, headache, and intermittent pyrexia, and was then admitted with these symptoms to H.M. Hospital, Hong Kong.

On admission to R.N. Hospital, April 16, 1939, temperature 102·4° F., pulse 120, respiration 24; the patient had intense headache, injection of the conjunctivæ, indeterminate macular rash that avoided the face but which was not typical of any specific fever. There were no other helpful physical signs; e.g., the liver, spleen, and meninges normal and motions normal. Thick and thin blood films revealed no malarial parasites. White blood cells 7,000 (polys. 69 per cent., lymphs. 30 per cent., monocytes 1 per cent.). The case was considered possibly as one of typhus, but he was isolated and treated as infectious. The injection of the eyes and flushing of the face by the rash were noted, and a Weil Felix test was ordered; also a Widal reaction, but the case did not look like one of typhoid fever. The Weil Felix test was negative, and so was the Widal reaction. However, the isolation was maintained. Meanwhile the temperature remained high (*see* chart) and the patient continued to exhibit all the symptoms noted above; he was clearly very ill. Four days later the Weil Felix test was repeated and this time was strongly positive (agglutination up to 1 600 *B. Proteus* X19). This reaction was confirmed by the Bacteriological Institute of Hong Kong. The patient was now shaved and treated with inunctions of ung. sulph., with 2½ per cent. hydrarg. ammon. until the bowels opened, so that the infectious fever precautions could be relaxed. On April 23 the patient appeared to have a crisis (*see* chart), especially as this was the thirteenth day of the fever (assuming the rash appeared on the fifth day), but on April 24 the patient had a big hæmorrhage from the bowel, reducing the red blood cells to 3,950,000 and resulting in further anæmia. (In typhus these hæmorrhages are due to arteritis in the mesenteric vessels leading to leakage through the vessel walls. Infarction may also occur.) On April 28 the patient again appeared to have turned the corner (*see* chart), but the 29th he complained of epigastric pain, and the temperature started to rise again. Examination revealed a large tender spleen, and it was clear that an infarct in the spleen had occurred. This slowly cleared up, and the patient finally left his lower May 9, and started to convalesce, which he continued to do without interruption until his discharge on June 9. Meanwhile the Weil Felix test had been repeated (May 5), and showed agglutination of 1 2,800 *B. Proteus* X19. A guinea-pig was also inoculated, and both it and one rat killed from it showed the typical typhus reaction.

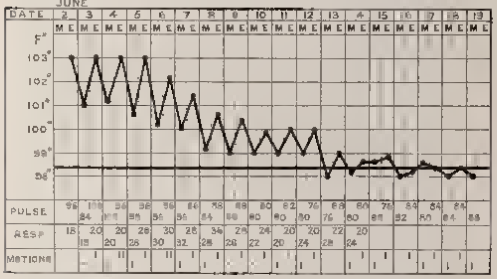
Nothing from the inoculation period, the patient apparently contracted the disease at Manila.

A Malay Signalman, aged 24, of H.M.S. *Duncan*, complained to his Medical Officer, June 1, 1939, of headache and pains across the shoulders, of three days' duration. He had a temperature of 100° F. and a papular rash. The next day the rash had faded, but the temperature was 101° F., and the patient was worse. He was admitted to R.N. Hospital, Hong Kong.

On admission, no rash was to be seen, so the case mentioned may have been a sweat rash. Temperature 101·6° F., pulse 100, respiration 18. The patient complained of malaise and headache, but of nothing else. The eyes were suffused. There were no abnormal physical signs in the chest, abdomen, or other systems. The urine was normal, and the deposit revealed no leucocytes. Malarial parasites were looked for, but not found. In view of the patient having no apparent cause for a temperature that had lasted three days, and as it was ascertained that he had been ashore in Amoy twelve days previously, he was regarded as being possibly a case of typhus, and was isolated pending further developments. The


APRIL
MAY
DATE
DAYS OF DIS.
F°
PULSE
RESP.
MOTIONS
On Admission
Typical Eruption
Last Eruption
Temp. on re-Admission
On Admission
Last Eruption

headache and malaise continued two days after admission (the first day of the disease) the patient developed a definite macular rash The macules were 1 centimetre and occurred especially heavily on the arms and legs but avoided the face They had a faded appearance A Weil Felix test showed a minimal positive response (1 100 to *Proteus* X19) Suitable steps were taken as regards shaving the patient &c The patient gradually improved and the temperature fell uninterruptedly to reach normal on the fourteenth day of the disease (*see* chart) The patient was never so ill as the preceding patient was and convalescence was uneventful The Weil Felix test was repeated on the day the temperature reached normal and it was found that the agglutination to *Proteus* X19 had risen to 1 1 100 This was confirmed at the Bacteriological Institute of Hong Kong A guinea pig inoculated at the time of the original test developed a typical typhus reaction, as also did a second guinea pig inoculated from the first one



Commentary—Except for the fact that both these cases showed only one of the three elements that may constitute the rash, they are representative of typhus in its severe and mild forms respectively Though the disease usually ends by one of the most definite crises in medicine it does not always do so, and this is especially true of typhus in the tropics

Typhus is normally a rarity in Hong Kong, and the four cases seen by the writer during the last two years together with several that have occurred in the local Infectious Diseases Hospital, are no doubt due to the Sino Japanese conflict For war by causing uncleanliness and the shifting of populations is the greatest cause of this disease

Typhus is known to be dangerous to doctors and nurses thereby differing from most of the infectious fevers As an example of this it may be mentioned that a fellow medical student of the writer's who went to China as a medical missionary, caught the disease, and died of it, soon after his arrival The danger is partly due to the fact that typhus is very contagious, but also to the fact that the disease is not often thought of as the cause of a fever, at least not before the rash appears In a locality where its occurrence is a possibility, it is important to think of typhus as the possible cause of a fever where no obvious cause such as pneumonia pyelitis or malaria, can be found and this is especially true if the patient looks somewhat dazed and has suffusion of the eyes (It may be noted

that the eyes are not suffused in typhoid) It is because of the above danger which now confronts in unusual degree all medical officers serving in China that the writer has been prompted to report these cases

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A CASE OF PULMONARY TUBERCULOSIS

By Surgeon Commander J G Holmes M D R N

H S S, aged 28, A B was admitted to R N Hospital Haslar on August 20 1936, with a history of a persistent cough with scanty sputum for about one year About a week before admission he had coughed up about an eggcupful of blood He did not complain of any loss of weight, energy, or appetite There was no relevant previous or family history

On examination he was found to be a thin wiry man with prominent clavicles There was no clubbing of the fingers On scrutinizing his medical history sheet it was found that in spite of his statement he had lost weight—from 132 lb in 1932 to 114 lb on admission

Clinical examination was negative apart from scattered rales in both lungs The blood count was normal The urine was normal Repeated examination of sputum failed to show any tubercle bacilli X ray of chest did not show any area of infiltration or exophasm Lipiodol bronchography did not show any bronchiectasis He remained under observation in hospital for two months He was afebrile all the time He coughed up about ½ to 1 oz of mucopurulent sputum every day He had a persistently high sedimentation rate of from 20 to 30 mm in 1 hour

The final diagnosis was chronic bronchitis and when he was discharged it was recommended that he should be kept under observation during that winter and take malt and oil

He apparently continued to feel all right and in 1937 he was passed fit for draft to the Mediterranean. In June 1938 he reported sick complaining of increasing cough loss of energy and night sweats He was found to be febrile He was admitted to H M S *Vaine* where tubercle bacilli were found in sputum and radiologically there was evidence of tubercular infiltration in the right upper and middle zones His weight then was 124 lb so that he had put on some 10 lb since October, 1936

He was invalided to the United Kingdom, and admitted to R N Hospital Haslar on July 30, 1938 We were able to compare all the examinations and findings with those of twenty one months before We now saw the tubercular infiltration in the right lung had we missed it previously? Looking back we were prejudiced we had independent outside opinion no one was able to find anything in the film of October, 1936 to suggest disease Yet it is reasonable to assume that he must have had tuberculosis then

The moral which may be drawn from this case is that haemoptysis is a symptom of the greatest importance and one not lightly to be dismissed as 'possibly from the gums or throat' when clinical radiological and laboratory examinations are negative

Let those who put their faith to the X ray diagnosis of early chest disease ponder on this case for a moment

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[illegible] IN REACTION FOLLOWING SULPHONAMIDE [illegible]

By Surgeon Lieutenant J. H. KERR-DAVIES, R.N.

[illegible] following case may be of interest in view of Hallum's article in the *Medical Journal* of March 18, page 559. "Severe skin and general [illegible] following the administration of M. & B. 693 and exposure to ultra violet [illegible] Knowles's reply concerning the photodynamic action of sulphonamide [illegible] April 1, 1939, page 692.

[illegible] Seaman, aged 20, reported to me on April 15, 1939, with an acute [illegible] urethral discharge. The upper part of his body was much tanned from [illegible] part were kept on until the symptoms mentioned later developed [illegible] with M. & B. 693, 3 grm. daily and irrigations of pot. permanganate [illegible] course of reporting sick. By April 22 he was free from discharge and [illegible] clear. However, on that morning he complained of a severe frontal [illegible] weakness in the calves, temperature and pulse normal. M. & B. 693 [illegible] ped. Next morning he had a marked generalized scarlatiniform [illegible] right sore throat. His face appeared a little swollen and his tongue [illegible] was complaining of headache and general malaise. Temperature [illegible] 99.

[illegible] aged that morning to the British Military Hospital, Tientsin [illegible] of drug rash following M. & B. 693. The next day he was [illegible] the Civil Isolation Hospital with a diagnosis of scarlet fever. By [illegible] had lapsed completely, leaving no staining or peeling the [illegible] having retained normal sinus rhythm.

[illegible] allowed to sit up on the 24th patient was allowed up, and he subscribed on [illegible] panda. That evening the headache returned and the rash reappeared all [illegible] the body; temperature 101° F., pulse 100, no sore throat, tongue clean. [illegible] morning his temperature was normal and remained so until his [illegible] discharge from Hospital on May 8, the rash having faded completely by May 2. [illegible] final diagnosis of drug rash was confirmed.

[illegible] return to the ship patient was put through the routine tests for cure [illegible] ten, all of which proved negative, and he returned to full duty on [illegible].

[illegible] at present I have treated eight cases of acute gonococcal urethritis [illegible] M. & B. 693. Seven cases complained of headache and lassitude on the [illegible] fourth day after treatment, but these symptoms were not severe enough [illegible] cessation of the drug. The symptoms usually disappeared on the [illegible]. The average length of time of the patients remaining on the C.D.A. [illegible] was twenty-five days. By the end of this time they had all passed tests for [illegible] namely prostatic massages, irrigations with silver nitrate and the passage

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ANKYLOSTOMIASIS—A MISLEADING CASE

By Surgeon Lieutenant D. S. SHUTT, R.N.

[illegible] patient, a signalman aged 23, had the following medical history:—

February 9, 1934. Obs. pulmonary tuberculosis, invalided from the China Station.

May 5. Chronic bronchitis. R.N. Hospital, Haslar.

April 4, 1937. Right pleurisy. R.N. Hospital, Haslar.

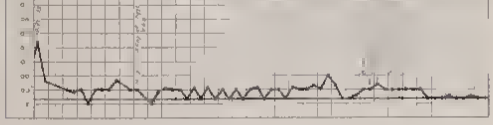
August 9, 1938. Right pleurisy, sea service, China Station.

April 4, 1939. Right pleurisy, *Daring*, China Station. Loss of weight—10 lb. in last six months.

The last attack of [illegible] with stabbing thoracic pain [illegible] no effusion. The inflammation subsided [illegible] of the heart. On the loss of weight the [illegible] was sent to hospital for X-ray of chest. X-ray and repeated examinations [illegible] On return to the ship [illegible] an intermittent temperature [illegible] He had one attack of [illegible] in the right iliac fossa.

Chronic subacute appendicitis [illegible] time ill health and [illegible]

Red blood-cells, [illegible] white blood-cells, 6,400 [illegible] 97 per cent. mononuclears [illegible] an anæmia and the nosinophil [illegible] produced fæces containing ankylostomes.



The patient was treated in the ordinary manner for starvation [illegible] with tetrachloride 3 m.c. and oil of chenopodium 1 c.c. in capsules followed by a saline purge. He passed many worms and eggs.

The temperature settled down to normal and the patient improved rapidly.

The points of interest appear to be:—

(i) The possibility of the man's present ill health being due to ankylostomes acquired during his last visit to China in 1911.

(ii) The case of overlook[illegible] a mistake which is common [illegible] Chinese but uncommon in men in the Service. The correct diagnosis might have been arrived at without the leading clue of the nosinophilia.

Correspondence.

THE JOURNAL

TO THE EDITOR OF THE JOURNAL OF THE ROYAL NAVAL MEDICAL SERVICE.

DEAR MR. EDITOR,—Next January the Journal attains its twenty-fifth birthday. It has occurred to me, and doubtless to many others, that the Silver Jubilee should not be allowed to pass unnoticed.

Might not our first Editors, R. C. Munday and W. L. Maitland, [illegible] as something of its birth pangs? It is true that in the Editorial of the first number we are told that the idea of having a journal of our own arose in the fertile brain of Sir James Porter, and was brought to fruition under his successor Sir William May; but there is a sad lack of detail, and no word at all of the great part the editors themselves played in its inception.

Now I [illegible] thought that their work has had its proper meed of recognition [illegible] that now there is a great opportunity to pay them a belated tribute [illegible] to let them know how greatly we older members have appreciated their work and that the newer generation is not behindhand in recognition of the debt we all owe to them

There is much I would like to say about the Journal itself of its literary standard nothing but praise is forthcoming Many eminent writers have honoured us with contributions, whilst those of our own members have shown professional merit of no mean order

The incalculable value of the Journal to its subscribers goes without saying It is a guide companion, friend a well nigh indispensable handbook Long may it prosper

Southsea
August 25 1939

I am sir
Your obedient servant,
H C Whitestone

RHEUMATISM

TO THE EDITOR OF THE JOURNAL OF THE ROYAL NAVAL MEDICAL SERVICE

Sir,—With reference to our recent article on vaccines in the treatment of Chronic Rheumatism in the July number of your Journal I should like to make a personal offer to provide medical officers in the Navy with as much stock vaccine as they could possibly require in the treatment of sailors by our methods An important point is that doctors who wish to use the method should learn first how it is done This might be accomplished by their coming to the Charterhouse Clinic where they would be welcome I may say that I should be only too glad to give every assistance in my power in forwarding this work

95 *Harley Street W*

I am sir
Yours &c,
H Warren Crowe

THE SULPHANILAMIDE COMPOUNDS IN THE TREATMENT OF GONORRHŒA

TO THE EDITOR OF THE JOURNAL OF THE ROYAL NAVAL MEDICAL SERVICE

Sir,—The widespread use of sulphanilamide compounds in the treatment of gonorrhœa raises a point upon which I would value some guidance

Say that a case of gonorrhœa treated by these compounds clears up in three to four days, he will not pass his tests of cure for at least a month afterwards During this time he is not infective except perhaps, whilst indulging in sexual intercourse

Should this man remain in the C D mess for the whole of this period? Or should he be there for a part of the time—in which case, for how long?

Also should his shore leave be stopped until he has passed his final tests of cure?

H M S 'Glasgow
August 1 1939

I am sir
Your obedient servant
F W Fosbery
Surgeon Lieutenant Commander

Reviews.

Infections of the H[illegible] By Lionel R Ebbell [illegible] Second Registrar and Third Assistant and Demonstrator in Pathology Hospital Second Edition By Patrick Clarke [illegible] Tutor Guy's Hospital Demonstrator of Anatomy [illegible] Guy's Hospital Medical School 1929 Pp xii [illegible] including 8 plates [illegible] Crown 8vo London H[illegible] Co Price 9s net

The first edition of this book was published in 1926, just [illegible] the death of its able author in a motor accident It was written [illegible] supplying students, house surgeons and practitioners, with a small book than one such as the masterly and classical monograph of [illegible] book was an acknowledged success due to the clarity and accuracy which combined with numerous excellent line drawings and plates [illegible] tation of a difficult subject in a concise but essentially practical form As a wide demand for the book is still maintained, the present [illegible] undertaken the production of this the second edition In doing so [illegible] rewritten or modified the entire work without materially depriving it of its original character Chapters have been added on the treatment of wounds of the blood, and on special infections with a section on insurance aspects including the final chapter on prognosis Only those sections which the present [illegible] has found by experience to be satisfactory are included

The book will assuredly maintain its popularity It definitely fills the [illegible] between the more detailed works by Kanavel and others and that of the [illegible] scant descriptions in general surgical literature A book which should have a permanent place on the bookshelf of those for whom it is primarily written

H L [illegible]

Treatment of Some Common Diseases (Medical and Surgical) By various Authors Edited by T Rowland Hill M D Lond M R C P Lond Physician to the Southend General Hospital Assistant Physician to the West End Hospital for Diseases of the Nervous System &c First Edition 1929 Pp xvii + 396 Demy 8vo Edinburgh E and S Livingstone Price 15s. net, postage 6d

This volume is the product of a team of authors who although on the staff of many different hospitals, are all members of the honorary staff of the Southend General Hospital Their object has been to produce a book, under the editorship of T Rowland Hill, covering a range of medical and surgical subjects that would prove of value, particularly to general practitioners It is not intended to be a complete textbook but rather a series of clinical monographs on a number of major common disorders met with in daily life. The subject matter has been limited so that each disease state may be dealt with without condensation and abbreviation The twenty-six monographs cover a diversity of ailments which will naturally vary in their appeal to the taste of individual readers The subjects however, have been well chosen, and as a composite whole, there is much to praise and little to blame

The chapters on Anginal Cerebral Vascular Disease Angina Pectoris Heart Failure Pleurisy and Broncho pulmonary Suppuration are well expressed and admirably illustrated For the surgeon the chapters on Head Injury and its

[illegible]ns, Enlargement of the Prostate and Infectious of [illegible] and [illegible] Suppurative Lesions about the Kidney &c, will fully repay careful reference to all the chapters in the book is impossible, but it is one of without interest and profit to the reader Here there is a book both informative and instructive which can be referred with ease and enjoyment It is beautifully produced and illustrated H I B

TEXTBOOK OF MEDICAL TREATMENT By various authors Edited by D M Dunlop M D F R C P Ed L & P Davidson M D F R C P Ed J W McNee, D Sc M D F R C P Foreword by A J Clark M D F R C P, F R S 1939 Pp 1127 27 figures 4 tables 7 plates 8 charts Edinburgh E and S Livingstone Price 25s net postage 7d

This Textbook of Medical Treatment compiled by a team of distinguished Scottish authors, and edited by Professors Dunlop Davidson and McNee maintains the high standard of clinical teaching which is traditionally associated with Scotland The country reference to treatment in most standard textbooks of medicine justifies the production of the book with its wealth of practical detail Such drugs and methods of the old regime which have stood the test of time are included while the others are ruthlessly discarded, thus making room for so much that is new and of proved value The authors have been extremely explicit in regard to any form of treatment recommended, in order that the directions given may enable medical men without much previous experience to carry them out Scarcely no attempt has been made to describe all the methods possible in a given case but rather to concentrate on those methods which they have proved to be of value from personal experience A large portion of the book deals not with drugs but with how a case should be managed The volume provides a basis for rational and critical judgment of modern therapeutic agents extent on [illegible] drugs which produce a recognizable effect the nature of which is [illegible] Until the presentation of such a very practical account of the [illegible] should therapeutics in each section of the work it is difficult to [illegible] The sections on the Anæmias, Tuberculous Cardiac Diseases, [illegible] Diseases Chronic Rheumatic Diseases and Psychotherapy are a few of the [illegible] attention The whole work is praiseworthy and is bound to be [illegible] of the distinguished team of Scottish authors It is without doubt the best book of its kind, which the medical man, who desires to be right up to [illegible] can not afford to be without H I B

[illegible] SERIES GENERAL NURSING Two Parts By Constance Parry S R N Sister Tutor Matron Infirmorum Hospital Belfast Examiner for the Irish Nursing and Midwives Council Northern Ireland First Edition Published by L and S Livingstone 16 and 17 Teviot Place, Edinburgh Price 1s 6d each part

This little book, Part I and Part II introduces itself as an attempt to aid students in the concise answering of examination questions By the method of simple and comprehensive answers to direct questions the author has succeeded in imparting much sound instruction which should prove of great assistance to those for whom the book is written and it might well be used by those who teach probationers and A D members The information is presented in a lucid and orderly fashion and the subjects dealt with range from hospital etiquette to the last offices But I think there are several suggestions on how to avoid waste of hospital property

The style is clear and the spacing good D W B

J. F. S[illegible] Edited by H[illegible] First Edition. Pp. 72–46 Ill[illegible] E. and S. Livingstone. 1914.

This edi[illegible] is naturally s[illegible] one ready to l[illegible] functions t[illegible] covers all aspec[illegible] properties syn[illegible] ebook might be full[illegible] index is comprehen[illegible] warmly for its pur[illegible]

Tropical Medicine. Clinical Lectures. By S[illegible] K.C.S.I., C.I.E., M.D., LL.D., F.R.C.P., F.R.C.S., [illegible] and Lecturer [illegible] School of T[illegible] Medicine, and S[illegible] Megaw, K.C.I.E., B.A., M.B., Hon. L.S. Lecturer [illegible] Tropical Medicine. Third Edition. 1914. Pp. 234 with [illegible] and 87 text figures. London: A. Churchill, 11, Port[illegible] W. Price 10s.

This volume is chiefly well known to the Sch[illegible] among those who have passed through their [illegible] years. It requires no special introduction accordingly.

The book is designed for practitioners and [illegible] encyclopedia. It fulfils its purpose admirably.

The third edition has not increased in bulk, but there are chapters having been rewritten. These include [illegible] typhus group of fevers and those [illegible] are also incorporated [illegible] the helminthic diseases.

In giving a full description of each subject the Tropical Medicine section is of the utmost value. Each [illegible] in sufficient detail [illegible] sections on diagnosis are clear [illegible] the busy man, and those on treatment are just what [illegible]

The lay out and printing of the book [illegible]

For those officers who are not specialists [illegible] is difficult to conceive a better guide [illegible]

News of the Service.

NOTICE

All communications for the Editors of the JOURNAL OF THE ROYAL NAVAL MEDICAL SERVICE should be addressed from now onwards and until further notice, to R N Hospital Barrow Gurney, near Bristol, and not to R N Hospital Haslar

ADMIRALTY ORDERS

1673.—Canteens—Medical Examination of N A A F I. Staff

(W 4784/37.—22 6 1939.)

A.F.O. 839/38 Section L paragraph 5 (i), should be amended to read as follows:—

"(i) *Medical Examination of Staffs.*—(1) *Medical Examination.*—All Naval canteen staff are medically examined by a civilian doctor before engagement. Before final proceeding for service afloat they are medically examined at a Naval establishment and before proceeding for service abroad are medically examined inoculated and vaccinated at a Naval establishment.

(2) A record there may be a continuous medical record of each member of the Naval canteen staff a medical history sheet containing a record of all medical examinations, inoculations and medical treatment both by Naval Medical Officers and by civilian doctors will be maintained throughout their service with the N A A F I.

(3) When a member of the canteen staff is drafted to a ship the N A A F I will send the history sheet to the Medical Officer of the ship. Subsequently the history sheet is to be dispensed as follows:—

When a member of the canteen staff is —	*The history sheet is to be sent* —
(a) transferred to another ship	(a) direct to the next ship.
(b) discharged to Naval shore establishment	(b) to the person marked "personal" in the N A A F I Area or District Manager concerned.
(c) discharged to N A A F I Depot	(c) (i) at Home—to the Assistant Secretary Naval Canteen Service, N A A F I, Imperial Court, Kennington Lane, S E 11. (ii) Abroad—to the N A A F I Area or District Manager at the Base.

When a member of the Naval canteen staff who is serving in a ship, has been sick on shore necessitating the care of a civil doctor the N A A F I will communicate particulars to the Medical Officer of the ship and then the necessary notation may be made in Sect on C of the medical history sheet.

(*A F O 839/38.*)

1719.—Medical Stores—Supply and Accounting

Royal Naval Air Stations

(M 0 G. 58/39.—21 6 1939.)

Medical stores remaining at Fleet Air Arm Stations taken over by the Admiralty will be transferred without financial adjustment and are to be taken on charge in the store account by the Naval Medical Officer (or other person) appointed to be in medical charge of those stations. A copy of the receipt voucher (showing the Air Force Account as to be furnished to the Medical Director General

2. Medical [illegible] will be made [illegible] on the basis of a Sick Quarter [illegible] appropriate [illegible] as shown in the Scale of Medical [illegible] for the medical examination and [illegible] may be necessary [illegible] of diet for the sick [illegible] required.

3. Naval [illegible] except blankets for ratings) [illegible] supplied [illegible] 811 sheets and pillow [illegible]

4. The Regulations [illegible] Article 651 [illegible] will the medium [illegible] and Warrant and Rating Officers and demands [illegible] except [illegible] Article.

1759.—Fleet Air Arm Personnel: Medical Instructions.

(M.(G.) 0837 of 19th [illegible] 1939.)

The following instructions concerning medical examinations are to be carried out in all Flying Personnel of the Fleet Air Arm including R.N.V.R. (All Branches). It will be noted that a special medical examination has been introduced for Warrant and Rating Observers, Technical Officers and Air Gunners on transfer to the Fleet Air Arm.

Scale.

1. Special medical examinations (*Flying Section*) will be introduced for *all* Flying personnel.

It will therefore be necessary for the above-mentioned to be submitted at the first medical examination when a flying boil and clothing allowance is claimed.

Form M.247 (Medical History Sheet) [illegible] completed by the Medical Director General and for this purpose the midshipmen [illegible] the report of the first medical examination (Form M.188 of Section II, para. 3) must be sent to the Medical Director General.

Declaration of Fitness.—Where officers are appointed to certain marked "Confidential" publications they are required to make a declaration [illegible]

2. *Personnel for Flying Duties.*—The following personnel will be examined:—

(a) Executive.

(b) Non-Flying Technical.

(c) *Flying Personnel.*—Will consist of:

1. Officers Warrant and Rating R.N. and R.N.V.R.
2. Officers Warrant and Rating Observers R.N. and R.M.
3. (A) Officers
4. Air Gunners
5. Officers (R.N.V.R. [illegible])
6. Officers Observers R.N.V.R. (A)
7. Fleet Air Arm Technical Officers (A.) (1) [illegible]

(d) *Non-Flying Personnel.*—Will not be examined but [illegible] Navy [illegible] (c).

3. *Medical Categories for Flying.*—Medical categories [illegible] will be applied to all persons examined under (2).

After a preliminary examination the following [illegible] and categories will be given—pro-tempore. These medical [illegible] will be reviewed [illegible] and confirmed or otherwise in accordance with instructions issued [illegible]

(a) The letters A will signify [illegible] Air Duties. The letters [illegible] will subsequently [illegible] Silver Grade Duties.

(b) A number [illegible] will be allotted [illegible] the latter A as:—

(1) Full flying duties.

(2) Limited flying duties.

(3) Ground duties only (pilot excluded).

(4) Non-Combatant passenger.

The letter combinations [illegible] will be:—

(a) First pilot flight. This would be limited to those [illegible] flying [illegible] and during periods of [illegible] only.

(b) [illegible]

(c) [illegible]

(d) Flying [illegible] only.

[illegible]

single [illegible] only. This limitation is [illegible] deleted.

(*f*) Dual fitted aircraft only and with another pilot.

The particular limitation in each case will be noted in the form. (c) Letters [illegible] tally added after both A and B for the purpose of indicating limitations of [illegible] as follows —

h — home service only (including service in one of H M ships based on a Home Port as long as the ship is not ordered to tropical waters)

t — temporarily unfit

p — permanently unfit

Examples —

A2Bh indicates Fit for limited flying at home and ground duties at home.

A4Bt indicates Temporarily unfit for flying, fit for ground duties.

A1B indicates Fit for full flying duties at home or abroad.

Section II

Medical Examination for Entry

(Forms required M 247 M 252 M 255 M 256)

(1) *Pilots Officers and other Ranks R A F (R–M)*—(*a*) *At Home*—Officers volunteering to [illegible] as Flying Air Arm pilots (including Engineer Officers volunteering for technical duties [illegible] Flying Air Arm under paras 2 8 of A F O 1856/38) or ratings who are Candidates for [illegible] to the Flying Air Arm will be required to undergo a special medical examination. This [illegible] carried out at the Medical Department of the Admiralty by the Admiralty Medical Board. Arrangements for the attendance of ratings will be made through Rear Admiral Naval Air Stations Leuchars Scotland. Arrangements for officers will be made at the Admiralty.

(*b*) *Abroad*—Candidates volunteering for training to the Flying Air Arm on Foreign Stations will have a provisional examination by the Ships Medical Officer. This proves that any serious [illegible] carried out as far as possible to conform with the standards contained in The Medical Examination for Fitness for Flying (Air Publication 136).

Final medical examination for fitness to learn to fly can be arranged by R A F Command Headquarters.

These are as follows —

(1) Middle East Command, Hospital, Cairo, Egypt.

(2) Aden Command Steamer Point, Aden.

(3) The East Command Union Building, Collyer Quay, Singapore.

(*Note*—Special boards may be arranged to meet Hong Kong if asked for.)

(4) India Command, South Block, New Delhi.

(5) Malta Station Command, Valletta, Malta.

(6) British Forces in Iraq, Habbaniya.

(7) R A F in Palestine and Transjordan, St. Julian's Way, Jerusalem.

(2) *Candidates for Short Service Commission Air Branch R N V*—Candidates for Short Service [illegible] Air Branch R N will be medically examined by the Admiralty Medical Board.

(3) *Civil Warrant and Rating Observer R N and R M*. Any men Officers volunteering [illegible] will be examined as for the Flying Air Arm under paragraph 9 of A F O 1856/38 and Air Armament Boards.

At Home—These candidates will be medically examined by a Medical Board according to the standards as laid down in the Appendix. Arrangements will be made in the R A N A S for ratings; arrangements for officers will be made at the Admiralty.

Abroad—In ships not carrying the necessary specialist arrangements will be made by the examinations to be carried out in Aircraft Carriers at through R A F Command Headquarters (vide Section II paragraph 1 (*b*)).

(4) *Volunteer Flying Observers*—There is no special medical examination required for the officers [illegible] of the Flying Air Arm.

Section III

Medical Examinations other than on Entry

Care must be taken that the results both positive and negative of medical examinations are recorded on the appropriate forms. In addition when a disability of a temporary nature is found the cause and probable duration of such disabilities will be indicated.

Decisions of Medical Categories—If the medical category of an individual examined is considered, by the medical officer to require that some arrangements are to be made by him to regularize [illegible] he must by referring the case to the competent medical authority for a medical board at the [illegible] opportunity (vide para. B 4 (*b*)). In this connection the duties for which the individual [illegible] will be fitted appear in the following category

[illegible] —*Annual Medical Exam* [illegible]

(Forms required Nil 248 Nil [illegible]

An [illegible] will be required for all [illegible]
[illegible] (a) and (b) will be adopted —

Pilot [illegible] and medical [illegible]
appears [illegible]
At [illegible]
for the [illegible]
[illegible]
[illegible]
Abroad [illegible]
the necessary [illegible]
Headquarters [illegible]
For [illegible]
Observers [illegible]
a special [illegible]
These [illegible]
respect of [illegible]

[illegible]

1 *Medical re* [illegible]
medical re [illegible]

(*a*) R N and R M [illegible]
[illegible]
Medical [illegible]

(*b*) R N and R M [illegible]
[illegible]

(*c*) (A) Barrel O [illegible]
[illegible]
[illegible]

(*d*) Alternating [illegible]
[illegible]

The above medical [illegible]
[illegible] ships with carry-[illegible]

[illegible]
examined [illegible]
N A S to whom [illegible]

Aboard [illegible]
examined [illegible]
[illegible]

2 *Special M* [illegible]
Board will normally [illegible]
of or above the rank [illegible]

(*a*) *Candidates for* [illegible]
standard of medical [illegible]
before a Medical Board [illegible]

(*a*) By the Medical Officer [illegible]

(1) Who [illegible]
[illegible]

(2) Duplicate [illegible]

(3) That all [illegible]

(*b*) By the Flag Surgeon, Medical Officer and the Medical [illegible]

(1) Whether [illegible]
[illegible]

SECTION IV

Form			Method of Completion	Disposal of Form
(R.A.F. ...) Hospital ... record ... (R.A.F. ...) ... envelope	On ... duty ... Do ...	... Medical ... Director ... completed as ... possible ... dental	... to be forwarded ... Medical Officer of H.M. ship ... appointed to a Flying ... Director General ... abroad to ... Medical Officer ... of new ship direct through ... Commanding Officer *From a ship or establishment on a foreign station to a ship or establishment at home* — To R.A. N.A.S. immediately the officer or rating embarks, unless he is proceeding in transport naval vessel or hospital ship when the envelope will be placed in the custody of the Medical Officer. If the ship was to be ... forwarded to R.A. N.A.S. immediately on disembarkation. If the officer or rating is disembarked in a service hospital however, Form M. 247 will accompany him to hospital *From a ship or establishment to Medical Board* — To the President of the Board so as to reach him 48 hours before the time fixed for the Board *On admission to a service hospital* — To the Medical Officer in charge of the hospital *On admission to a civil hospital* — To be retained until the officer or rating is transferred to a service hospital when it will be sent to the latter

SECTION IV (continued)

Form			Method of Completion	Disposal of Form
				On discharge from hospital to Medical Board — To the President of the Board so as to reach him 48 hours before the time fixed for the Board *On leaving a sick leave* — Return until ... for Board ... *Medical Board* ... *on discharge to duty* — To Commanding Officer for Medical Officer of H.M. ship ... ... *is employed home or half pay* — To Medical Director General Admiralty ... *reverts to General Duties* unless ... has been obtained to keep in flying practice ... *retired list or discharged* ... — To Medical Director General Admiralty
Form M. ... (R.A.F. ...) ...	Annual Medical examination Re-examination for any cause Change of allocation of medical category for flying Do	Card and flimsy to be completed and signed by the Medical Officer Note — This form will not be rendered for patient while in hospital		Flimsy to be placed in medical history envelope (Form M. 247 (R.A.F. 49)) which is to be annotated accordingly. Card copy to be forwarded to the Medical Director General through R.A. N.A.S. Card and flimsy to Medical Director General direct
Form M. 249 (R.A.F. ...) ... notes for ... of Form M. ...		In duplicate		1 copy retained by examining Medical Officer 1 copy to be forwarded to R.A. N.A.S.
Form M. 250 (R.A.F. 46) ... History	Officer or rating appearing before Medical Board after sickness or injury	Card and flimsy to be completed and signed by all Members of the Board		Flimsy to be placed in Form M. 247 (R.A.F. 49) which is to be annotated accordingly. Card copy to be forwarded to Medical Director General through R.A. N.A.S.
Form M. 251 (R.A.F. 47) (Board Record) of M. 250	Officer or rating appearing before Medical Board after sickness or injury	Four copies to be completed and signed by all Members of the Board		1 copy to Secretary of Admiralty 1 copy to Medical Director General 1 copy to R.A. N.A.S. 1 copy retained by the Board

[illegible]	[illegible]	[illegible]	[illegible]
[illegible] (R.A.F. [illegible]) Hospital [illegible] [illegible] (R.A.F. [illegible]) [illegible] envelope	On duty [illegible] duty doubt [illegible]	[illegible] Medical [illegible] Director [illegible] [illegible] is added [illegible] dental [illegible] completed as [illegible] possible [illegible] dental	[illegible] to be forwarded [illegible] Medical Officer of H.M. ship [illegible] appointed to a Flying [illegible] Director General [illegible] or abroad to [illegible] Medical Officer of old ship [illegible] Medical Officer of new ship direct through [illegible] Commanding Officer *From a ship [illegible] on a foreign station to a ship [illegible]* —To R.A. N.A.S. immediately the officer is sailing embarks, unless he is proceeding in transport naval vessel or hospital ship when the envelope will be placed in the custody of the Medical Officer of the ship who is to be instructed to forward it to R.A. N.A.S. immediately on disembarkation. If the officer is taking passage in a service hospital, however, Form M. 247 will accompany him to hospital *From a ship [illegible] to Medical Board* —To the President of the Board so as to reach him 24 hours before the time fixed for the Board *On admission to a service hospital* —To the Medical Officer in charge of the hospital *On admission to a civil hospital* —To be retained until the officer or rating is transferred to a service hospital when it will be sent to the latter

SECTION IV (continued)

Form No.	[illegible]	Method of Completion	Disposal of Form
			On discharge from hospital to Medical Board —To the President of the Board so as to reach him 48 hours before the time fixed for the Board *On discharge to sick leave* —Retain until fit for Board *From Medical Board on discharge to duty* —To Commanding Officer for Medical Officer of H.M. ship (if [illegible]) *On placing on unemployed time or half pay* —To Medical Director General Admiralty *On [illegible] reversion to General Duties unless [illegible] has been obtained to keep in flying practice* *[illegible] or retired list or discharged* [illegible]
Form M. [illegible] (R.A.F. [illegible]) [illegible]	Annual Medical examination Re-examination for any cause Origin of alteration of medical category for flying	Card and flimsy to be completed and signed by the Medical Officer Note —This form will not be rendered for patients while in hospital	*On death* —To Medical Director General Admiralty Flimsy to be placed in medical history envelope (Form M. 247 (R.A.F. 49)) which is to be annotated accordingly. Card copy to be forwarded to the Medical Director General through R.A. N.A.S. Card and flimsy to Medical Director General direct
Form M. 249 (R.A.F. [illegible]) [illegible] notes for [illegible] of Form M. [illegible]	Do	In duplicate	1 copy retained by examining Medical Officer 1 copy to be forwarded to R.A. N.A.S.
Form M. 250 (R.A.F. 46) [illegible] History	Officer or rating appearing before Medical Board after sickness or injury	Card and flimsy to be completed and signed by all Members of the Board	Flimsy to be placed in Form M. 247 (R.A.F. 49) which is to be annotated accordingly. Card copy is to be forwarded to Medical Director General through R.A. N.A.S.
Form M. 251 (R.A.F. 47) (Board Record) of M. 250	Officer or rating appearing before Medical Board after sickness or injury	Four copies to be completed and signed by all Members of the Board	1 copy to Secretary of Admiralty 1 copy to Medical Director General 1 copy to R.A. N.A.S. 1 copy retained by the Board

[illegible]	For medical examination as to fitness for [illegible]	[illegible]	[illegible] Secretary of Admiralty [illegible] Medical Director General [illegible] R A N A S
[illegible] R A N A S [illegible]	To despatch all forms referred to in this memorandum with the exception of Form M 254	Roman for forwarding documents Full description of document	[illegible] documents and [illegible]
[illegible] R A N A S [illegible]	Do	Do	Do
[illegible] R A F [illegible]	For all flying personnel on whom a Medical Board has been held	[illegible] duplicates	1 copy to individual to whom it refers 1 copy to the Commanding Officer of [illegible] establishment 1 copy to R A N A S 1 copy to Medical Director General 1 copy retained by the Medical Board
[illegible] 75 (R A F [illegible] Illness)	For final medical examination as to fitness for [illegible] duties	For use of final medical examining Board only	Flimsy and card copy to be forwarded to the Medical Director General direct
[illegible] 56 (R A F 93) Memorandum for completion of Form M 255 (R A F [illegible])	Do	Do	Retained as Board copy

The attention of Medical Officers is drawn to the following —

(a) All Medical documents will be completed either in typescript or ink

(b) All Medical documents will be despatched under cover of Form M 253 (R A F 501) (except for documents) in a sealed package marked confidential and posted in accordance with King's Regulations and Admiralty Instructions Article 572

[illegible] 1410 and 1411 [illegible] personnel only [illegible]

[illegible] *Medical* [illegible] Non-Flying [illegible] Alphabetical [illegible] List of Minor [illegible] Medical Dir[illegible] cases treated for [illegible]

H M [illegible] Personnel [illegible] Form M [illegible] (Alphabetical [illegible] List of Minor [illegible] respect of Personnel [illegible] Medical [illegible] Journal (M [illegible]) [illegible] and M 1791 [illegible] Company [illegible] include Flying [illegible]

(*b*) Non-Flying [illegible] are [illegible] Company [illegible] purposes [illegible] Medical Returns.

Medical [illegible] *and Standards* [illegible]

[illegible]

1 The Medical [illegible] of all flying [illegible] fully flying [illegible] to A I B

2 Medical [illegible] Royal Air Force [illegible]

The medical [illegible]

Medical [illegible]

[illegible]

[illegible] following differences

(1) [illegible] A I B [illegible] the following [illegible]

(*a*) Leg Length

[illegible] Expiratory [illegible]

(*c*) Self Balancing

(*d*) Ocular Muscle Balance

In addition the following modifications are made to the A I B standard

Blood Pressure —The high limits will not exceed 160/100 [illegible] not be impaired

Migraine —This is not necessarily a cause for rejection unless [illegible] of frequent occurrence

Hearing —A forced whisper must be heard at 20 ft when [illegible] turned to the examiner and both meatus are unblocked

The full physical examination is to be carried out and recorded. A radical [illegible] operation is not a bar to acceptance provided the end result is good

Note —Standard of vision for (1) pilot and observer will be the same [illegible]

with each case tested separately (2) If any officer or rating requiring, as A 3 B category, what is sufficiently in his opinion has been maintained, is found to be slightly below the standards as laid down it is considered should be specially reported to the Medical Director General

(*A F O* 1656/38)

(*A F O s* 1285/36 *and* 3041/55 *are cancelled*)

1802 —Air Publication 130—Medical Examination for Fitness for Flying—Issue

(M D G 6381/39 —26 6.1939)

A copy of Air Publication 130—Medical Examination for Fitness for Flying (Royal Air Force and Civil) will be supplied to all ships and establishments for the use of Naval Medical Officers in connection with the physical examination of Naval flying personnel

2 The publication will be included in the appropriate section of Form E R 1 (Catalogue of Books of Reference) and issues will be made on the following scale —It should be accounted for on Form S 1284

To all H M Ships and Naval Establishments (except as under) in which a Medical Officer is borne	1 copy to each
R N Hospitals Haslar, Plymouth and Chatham	4 copies to each
Other R N Hospitals at Home and Abroad (except Yarmouth)	3 copies to each
R N Barracks	2 copies to each

3 Supply of this publication, together with amendments and reprints as issued will be made without demand

1830a —Fleet Air Arm Personnel—Medical Instructions—Amendment to A F O 1567/39

(M D G 8397/39—6 7 1939)

A F O 1567/39 is to be amended as follows

APPENDIX.

Paragraph 9

Observers Raising Observers and Air Gunners

For (i) For an A 3 B category the following tests will be employed —

substitute (i) For an A 3 B category the following tests will not be employed —

1877 —Anti Cholera Vaccine—Supply—REPORTS

(M D G 8312/39—6 7 1939)

Arrangements have been made for the manufacture of anti cholera vaccine at the Naval Medical School, Royal Naval College, Greenwich and for stocks to be maintained in the cool room at the R N Hospitals Malta Hong Kong and at H M Naval Base Singapore At a later date stocks will also be kept at the R N Medical Depôt, Trincomalee and the R N Stock Quarters Wei Hai Wei The vaccine will be supplied to these establishments without demand

2 Demands for anti cholera vaccine required by H M ships or establishments on the East Indies and China stations should be made on the nearest depôt named above The vaccine will be obtainable in 50 c c bottles

3 Medical officers are to render reports direct to the Professor of Pathology Greenwich, at the end of each month, giving information similar to that required in the case of T A B C. vaccine (*vide* Art 1417 para 15, King's Regulations and Admiralty Instructions) Batch numbers should invariably be quoted in the reports

1878 —T A B C. Vaccine—Period of Use

(M D G 3912/39 —6.7 1939)

T A B C. vaccine is not to be used later than two years after the date of issue shown on the labels of the bottles

(*A F O* 926/37—*not in annual volume.*)

(N 4076 39—10 | 1339)

The following additions to the list of categories should be made in A.L.O. 1924/38, paragraph 16:

Air Artificer
Air Fitter
Air Rigger
Air Mechanic (A), (E), (L) and (O)

Table (Appendix I A.F.O. 1924/38) should be added the table of Eyesight Standards which have been approved for these ratings:

Entry standard			Retirement standard		Standard in final period	Total number of periods	Remarks
Distant		Near	Distant	Near			
Air Artificer (Apprentice or as Direct Entry)	6/9 6/9	D.1.0	6/12 both eyes, worse eye not less than 6/36. With glasses 6/6 6/9 at least	D.0.1	The cases of ratings whose vision falls below the retirement standard are to be referred to the Admiralty for decision	11	A high degree of hyperopia (more than 5 dioptres) disqualifies for entry. Wide of vision to be normal (contraction to 10°). The use of glasses is permitted (vide paragraph 18 A.L.O. 1924/38). Glasses should be supplied if vision falls below 6/12 6/12.
Air Fitter (A), (E), (L) and (O), Air Rigger, Air Mechanic (A), (E), (L) and (O)	6/12 both eyes, worse eye not less than 6/18	D.0.1	6/24 both eyes, worse eye not less than 6/36. With glasses 6/12 6/12 at least	D.1.0	The cases of ratings whose vision falls below the retirement standard are to be referred to the Admiralty for decision	11	As for Air Artificer.
Air Mechanic (A), (E), (L) and (O)	6/12 both eyes, worse eye not less than 6/18	D.1.0	6/24 both eyes, worse eye not less than 6/36. With glasses 6/12 6/12 at least	D.1.0	The cases of ratings whose vision falls below the retirement standard are to be referred to the Admiralty for decision	11	As for Air Artificer.

2090 Tetanus Toxoid for Preventive Inoculation against Infection with Tetanus
(M D G 2054 3/4—20/ 1939)

Owing to the ever present danger of infection by tetanus whenever a wound has been received or found especially on shore it has been decided to offer prophylactic inoculation against the disease to all officers and men of the Naval Service in future by means of hypodermic injections of tetanus toxoid.

The method of inoculation consists of two injections of the vaccine at an interval of six weeks. Experience has shown that no unpleasant or serious after effects have been reported. While it is known at present only to cause a slight degree of immunity which is of short duration

Although the inoculation is entirely voluntary it is strongly urged that personal should take advantage of it especially in view of possible infection and subsequent infection during the present war and it is hoped that all officers and men will avail themselves of the opportunity at any time

Medical officers will be instructed by Medical Department Admiralty indicating the number of vaccines required for each port

Medical officers who have inoculated or satisfy themselves as to the effects to be made on their Medical History Sheets (M 188 and B) should be requested to ask officers so protected to state that they have informed Medical Authorities of the fact in the event of having been exposed to the risk of infection with Tetanus

2376 —Forms S 535 Medical History Sheet Index Card and S 535A, Attendance Card for Use in Sick Bays—Instituted
(Sta. 3398/39—17 S 1939)

Demands have been received for the past from ships for cards of this type but in more than different designs and therefore it has been decided to issue a standard pattern for use in all ships in commission at the discretion of principal medical officers of many differing designs

S 535 Medical History Sheet index card size 6 in by 4 in contains spaces for name rating O N weight inoculation vaccination serial number ship joined from &c

S 535A (in 1 volume) contains spaces for date S B No mess number rating and details of treatment On the back of the form are printed instructions for the guidance of ratings attending the sick bay for treatment This card is intended to be carried by ratings under treatment and is to be produced to the Regulating Staff or other persons in authority when required

Demands for these cards should be in minimum requirements should be forwarded to the Naval Store Officer Royal Victoria Yard Deptford

***2381 —Professional Examination for Warrant Wardmaster July 1939—Result**
(C W 19014/39—24 S 1939)

The following result was obtained at the Royal Naval Hospital Haslar on July 20 1939 —

Rating	Name	O N	Marks										Total Marks	Result
			Part 1		Part 2		Part 3		Part 4					
			Papers	Oral	Papers	Oral	Papers	Oral	Papers	Oral	Papers	Oral		
			250	50	200	50	150	50	100	50	200	50	900	
S L C P O	Semmens W B	P M 37130	240	44	118	40	136	44	88	46	162		670	Passed
S B C I O	Walsh W J	D M 36946	161	48	163	39	128	38	88	49	170		670	Passed
S B C P O	Chapman K A J	P M 36246	159	42	150	40	99	37	88	43	169		629	Passed
S B C P O	Carter L J	D/M 30117	183	45	146	42	114	45	88	46	168		625	Passed
S B P O	Ware W S	D/M X 45307	148	48	144	35	124	10	51	36	119		619	Passed
S B C P O	Martindale D F	P M 35519	134	36	160	38	90	38	35	30	130		590	Passed
S B C P O	Wells E	C/M 35956	125	36	140	38	96	42	52	33	160		590	Passed
S B C P O	Peers V L M	P/M 36188	140	28	140	26	124	28	50	34	156		566	Passed
S B P O	Jessey L A	P/M 36290	126	32	148	30	80	26	50	37	134		563	Passed

2355.—Blood Transfusion
(C.W. N. [illegible]/39.—[illegible])

[illegible] blood for [illegible] patients in naval medical establishments [illegible] intended to [illegible] Royal Marines.

[illegible]

2368. Dental Appliance Work—Decentralization of Laboratories
(M.D.G. [illegible])

A dental laboratory has now been established at R.N. Barracks, Portsmouth, under [illegible] of the [illegible] Dental Officer.

Approved appliance work for ratings of the Portsmouth Division serving in [illegible] establishments and H.M. Ships in home waters commencing on or after September [illegible] to be sent to this centre instead of to the Dental Officer, R.N. Barracks, Chatham [illegible] at the Chatham Laboratory, and all cases for ratings attached to the [illegible] and Chatham Divisions will continue to be dealt with at R.N. Barracks, Chatham [illegible] completion of the dental laboratory at R.N. Barracks, Devonport, when [illegible] and repairs [illegible] for Devonport Division ratings will be similarly [illegible].

2434.—Fleet Air Arm. Medical Documents of Flying Personnel
(N/M.D.G. [illegible]/39.—[illegible])

Commanding Officers are to ensure that when flying personnel leave a ship or establishment the Medical Officer is informed at the earliest possible moment of the destination of the [illegible] ratings concerned in order that the necessary medical documents may be forwarded to his next ship without delay.

2. In case of doubt as to the ultimate destination of an officer or rating who is discharged to the United Kingdom, "M.21" (Medical History Envelope) and enclosures are to be forwarded to the Rear Admiral, Naval Air Stations.

3. In the event of a delay occurring, early application to the previous ship is to be made for the medical documents by the Medical Officer of the officer or rating's new ship. If the whereabouts of an officer's or rating's medical documents are not known, application is to be made to the Rear Admiral, Naval Air Stations.

BIRTH

FORSYTH.—On September 15, 1939, at Worthy Down, Winchester, to Dorothy, wife of Surgeon Lieutenant-Commander A. N. Forsyth, R.N., a son.

PROMOTIONS

Surgeon Commanders [illegible] M.D., B.Ch., D.P.H., [illegible] M.D., Ch.B. [illegible] H. W. [illegible] Williams, M.B., Ch.B., D.P.H., to be Surgeon Captains, [illegible] 1939.

Surgeon Lieutenant-Commander [illegible] S. Osborne, L.R.C.P. & S., to be Surgeon Commander, [illegible] 1939.

Surgeon Lieutenant-Commander F. W. [illegible], M.R.C.S., L.R.C.P., to be Surgeon Commander, July [illegible] 1939.

Surgeon Lieutenant-Commander [illegible] Dolan, M.B., B.Ch., to be Surgeon Commander, July [illegible] 1939.

Surgeon Lieutenant-Commander P. B. [illegible], M.R.C.S., L.R.C.P., to be Surgeon Commander, August 14, 1939.

Surgeon Lieutenant-Commander [illegible] W. Froggatt, M.B., B.Ch., to be Surgeon Commander, August 17, 1939.

Surgeon Lieutenant-Commander D. R. [illegible] Bertram, M.B., B.S., to be Surgeon Commander, August [illegible], 1939.

Surgeon Lieutenant-Commander J. H. Nicholson, M.B., Ch.B., to be Surgeon Commander, September 5, 1939.

Surgeon Lieutenant-Commander M. A. Graham Yooll, M.B., Ch.B., to be Surgeon Commander, September [illegible], 1939.

Surgeon Lieutenant W. D. [illegible], M.D., C.M., to be Surgeon Lieutenant-Commander, July 13, 1939.

Surgeon [redacted] F J Littlejohn L.M.S.S.A. to be Surgeon [redacted] Commander, August 1 1939

Surgeon Lieutenant (D) W L Mountain, L.D.S. to be Surgeon Lieutenant-Commander (D), September 4 1939

Surgeon Lieutenant (D) S R Wallis L.D.S. to be Surgeon Lieutenant-Commander (D), September 4 1939

RETIREMENTS

Surgeon Rear Admiral P Pickering Eick O.B.E. M.R.C.S. L.R.C.P., placed on the retired list at own request in order to facilitate the promotion of junior officers

Surgeon Commander J E Crawford M.B. B.Ch. placed on the retired list on account of age regulation with rank of Surgeon Captain, June 3 1939

Surgeon Lieutenant R M O'Sullivan M.B. F.Ch. withdrew on termination of Short Service engagement and transferred to Emergency List, July 24, 1939

ENTRIES

Messrs. F W Edmundson, M.R.C.S. L.R.C.P. G N Reed M.B. Ch.B. and J K Salmon M.R.C.S. L.R.C.P. entered as Surgeon Lieutenants, R.N. for Short Service and appointed to R.N. Hospital Haslar (for courses of instruction), June 30 1939

Mr. E A Penn, M.R.C.S. L.R.C.P. entered as Surgeon Lieutenant, R.N. for Short Service and seconded whilst holding a civil hospital appointment, June 30 1939

Mr. J Y Wardhaugh M.B. entered as Surgeon Lieutenant, R.N., for Short Service and appointed to R.N. Barracks, Portsmouth, July 16, 1939

ROYAL NAVAL VOLUNTEER RESERVE

PROMOTIONS

Surgeon Lieutenant-Commanders E W C Archer M.D. and F A McLaughlin M.B. F.R.C.S. R.N.V.R. to be Surgeon Commanders, R.N.V.R., June 30 1939

Surgeon Lieutenant-Commanders (D) G A O White L.D.S. and A C Mercer L.D.S. to be Surgeon Commanders (D), April 15 1939

Probationary Surgeon Lieutenants H W Clegg and W E Kershaw confirmed in rank, May 30 1938

Probationary Surgeon Lieutenant C P Hey confirmed in rank April 29 1938

Probationary Surgeon Lieutenant T McEwan confirmed in rank, February 18 1938

TRANSFERS

Surgeon Lieutenant-Commander J A Kerr transferred from List II, Mersey Division, to List I, Humber Division

Probationary Surgeon Lieutenant G L Ward transferred from List II, Tyne Division, to List I, Humber Division

ENTRIES

Mr. D N Wallis, L.M.S.S.A. entered as Surgeon Lieutenant, R.N.V.R., List I, Humber Division, December 7 1937

Messrs. A L Robertson M.R.C.S. L.R.C.P. J M Robertson M.B., B.S. M.R.C.S. L.R.C.P. R F Weall M.R.C.S. L.R.C.P. and C A J Sampson, M.R.C.S., L.R.C.P., entered as Probationary Surgeon Lieutenants, R.N.V.R., List II, London Division, May 23 1939

Mr. I M Sheppard M.B. B.S. entered as Probationary Surgeon Lieutenant, R.N.V.R., List II, Severn Division, May 24 1939

Messrs. A W N Galway, M.R.C.S. L.R.C.P. and E C Murless, M.R.C.S. L.R.C.P. M.B. M.O.O.G. entered as Probationary Surgeon Lieutenants, R.N.V.R., List II, London Division, May 3, 1939

Mr. J. C. Evill entered as Probationary Surgeon Lieutenant [illegible] 1939

Mr. G. R. Lunn M.B., Ch.B., M.R.C.P. appointed as Temporary Surgeon Lieutenant Lieut. H. London Division, May 3, 1939

Mr. T. J. Martin B.Ch., M.R.C.S., L.R.C.P. appointed as Temporary Surgeon Lieutenant Lieut. H. Humber Division, June 9, 1939

Mr. R. N. B. Cridland, B.M., B.Ch., D.H., M.R.C.S., L.R.C.P. appointed as Temporary Surgeon Lieutenant Lieut. H. Sussex Division

Mr. C. W. Tovell, M.B., B.S. entered as Probationary Surgeon Lieutenant Lieut. H. Tyne Division, June 21, 1939

Mr. G. E. Shafto, M.B., B.S., M.R.C.S., L.R.C.P. appointed as Temporary Surgeon Lieutenant Lieut. H. Tyne Division, June 28, 1939

Mr. I. H. Dalgleish, M.B., B.Ch. entered as Probationary Surgeon Lieutenant Lieut. H. Humber Division, June 21, 1939

Mr. T. H. W. Ritchie, M.D., B.Ch. entered as Probationary Surgeon Lieutenant Lieut. H. Severn Division, June 21, 1939

Mr. K. R. Pillet, M.R.C.S. entered as Probationary Surgeon Lieutenant Lieut. H. Severn Division, June 21, 1939

Mr. J. Bean, M.B., Ch.B. appointed as Temporary Surgeon Lieutenant Lieut. H. Drummond, July 13, 1939

Mr. H. W. Gothard, M.B., Ch.B. entered as Probationary Surgeon Lieutenant Lieut. H. Humber Division, July 14, 1939

QUEEN ALEXANDRA'S ROYAL NAVAL NURSING SERVICE

ENTRIES

Miss S. M. Silk (Nursing Sister, Q.A.R.N.N.S. (R)) entered as Nursing Sister, Q.A.R.N.N.S., August 24, 1939

Miss J. Campbell (Nursing Sister, Q.A.R.N.N.S. (R)) entered as Nursing Sister, Q.A.R.N.N.S., August 21, 1939

Miss P. E. Park (Nursing Sister, Q.A.R.N.N.S. (R)) entered as Nursing Sister, Q.A.R.N.N.S., August 24, 1939

PROMOTIONS

Superintending Sister Miss N. S. Gunn to be Acting Matron, September 2, 1939

Superintending Sister Miss E. M. G. Hirst, R.R.C., to be Acting Matron, September [illegible]

Senior Sister Miss E. M. Bowlby, A.R.R.C., to be Acting Superintending Sister

Nursing Sister Miss N. K. Wetherway to be Acting Superintending Sister, September [illegible]

Nursing Sister Miss D. G. Dewsnap to be Acting Superintending Sister, September [illegible]

Nursing Sister Miss I. K. Coleman to be Acting Superintending Sister

Nursing Sister Miss C. B. Sillson to be Acting Superintending Sister, September [illegible]

Senior Sister Miss A. M. Cooper to be Acting Superintending Sister

Nursing Sister Miss M. Hedderman to be Acting Superintending Sister, September [illegible]

Nursing Sister Miss D. Bishop to be Acting Superintending Sister, September [illegible]

Nursing Sister Miss M. M. Bourne to be Acting Superintending Sister, September [illegible]

Nursing Sister Miss M. E. Cheetham to be Acting Superintending Sister, September [illegible]

RESIGNATIONS

Nursing Sister Miss D. M. Bradshaw resigned, September [illegible]

Nursing Sister Miss S. Kirkpatrick resigned, August [illegible]

Notices.

BRITISH MEDICAL ASSOCIATION MEETING ABERDEEN, 1939

The Keynote of the Burroughs Wellcome and Co exhibit at the Aberdeen meeting of the British Medical Association was the slogan "Science Marches On" at the head of an illuminated transparent background on which the figure of a white coated modern research worker was silhouetted against the dark form of a mediæval alchemist

The illuminated device formed a striking background to an exhibit of medicaments typifying results of scientific research

Evidence of an important development in the preparation of antitoxic sera was seen in the "Wellcome" Brand Refined Sera, which are prepared at The Wellcome Physiological Research Laboratories, Beckenham Recent investigations have made it possible to separate the antitoxin bearing globulin fraction of antitoxin serum from those proteins which are devoid of antitoxic value As a result, refined sera contain, for the same number of units, only half or less than half the amount of protein present in ordinary concentrated antitoxins, while a given unit dosage is presented in a greatly reduced volume of fluid "Wellcome" Brand Refined Sera for the treatment of Diphtheria, Scarlatina, Tetanus and Gas Gangrene (Perfringens) were on view

Other serological products which were represented in the exhibit included 'Wellcome' Tetanus Prophylactic Formol Toxoid, 'Wellcome' Tuberculin P P D Purified Protein Derivative, and the range of 'Wellcome' Diphtheria Prophylactics for active immunization Another notable product of The Wellcome Physiological Research Laboratories was "Stypven" Russell Viper Venom The product provides a reliable and effective haemostatic in convenient form, and is widely used in dental and minor surgery, as well as in the treatment of external wounds in haemophilia

Considerable interest was shown also in "Nicamide" Nicotinic Acid Diethylamide which has been found to have a powerful pharmacological effect both on respiration and on the circulatory system Among the indications for its use are respiratory and circulatory complications arising post operatively or during acute infections coronary thrombosis barbiturate poisoning, and asphyxia neonatorum Nicamide is issued in 25 per cent solution for oral administration in bottles of two sizes, the smaller being accompanied by a pipette for measuring the dose 'Hypoloid' Nicamide, which is also available, is suitable for either intravenous or intramuscular injection

Prominence was given to preparations of Stilboestrol, the new synthetic œstrogen, which faithfully reproduces the physiological action of the natural hormone It is of interest to note that oral administration of Stilboestrol appears to be as effective as intramuscular injection Stilboestrol is effective in oil solutions for which the natural œstrogenic hormones have hitherto been used It is indicated particularly in menopausal conditions, including atrophic vaginitis and kraurosis vulvæ and has also been found to be of value in amenorrhœa, dysmenorrhœa and pruritis vulvæ. The preparations displayed included "Tablold" Stilboestrol for oral administration and "Hypoloid" Stilboestrol for injection Stilboestrol Dipropionate, now under clinical trial, appears from laboratory evidence to have a more lasting effect than Stilboestrol, without undue reduction of activity Corresponding preparations of this ester were also on view

The bacteriostatic action of Sulphonamide P (Sulphanilamide) was demonstrated

by means of a screen carrying a series of photographs of human throat smears showing infection with haemolytic streptococci and their destruction by Sulphonamide Ciba with restoration of normal conditions. Increasing clinical experience with the compound has more than confirmed the sphere of usefulness and has established it among the most important discoveries of recent years. A growing volume of evidence emphasizes its value, especially in infections due to the haemolytic streptococcus, but in many other bacterial infections including meningococcal and streptococcal meningitis, pneumococcal peritonitis, gonorrhœa and *B. coli* and *Proteus ammoniæ* infections of the genito-urinary tract. Laboratory experiments indicate that Sulphonamide P may be of use also in the treatment of gas gangrene, typhoid and paratyphoid fevers (especially for clearing up carriers), *Brucella abortus* infections and staphylococcal septicæmia, though clinical experience for this group of infections is still limited. Two products were displayed—Tabloid Sulphonamide P, for oral administration and Wellcome Sulphonamide P, a crystalline powder, suitable for either parenteral or oral administration.

Vitamin products both natural and concentrated were well represented in the exhibit. They included—Kepler Cod Liver Oil with Malt Extract, a palatable and nutritious medium for the administration of Vitamins A and D; Ryzamin B, Rice Polishings Concentrate, a palatable product with a rich content of Vitamin B; "Tabloid" and "Hypoloid" Nicotinic Acid; Tabloid Cevitone; Tabloid and "Hypoloid" Vitamin B, Hydrochloride; Tabloid "Ascorbic Acid"—Tabloid Calciferol and "Tabloid" Calcium Gluconate with Calciferol.

"Tabloid" Medicine Chests and Cases, First Aid Outfits and hypodermic apparatus were again an interesting feature of the exhibit, together with a selection of "Tabloid" and "Soloid" Products.

THE "AGLA" ATOMISER

The value of an atomiser in which all the parts in contact with the medicament are made of glass is at once obvious. The Agla Atomiser introduced by Burroughs Wellcome and Co., Snow Hill Buildings, London, E.C.1, produces an effective vapour like spray from aqueous or thin oily liquids which come into contact with glass only. The Atomiser is so constructed that the larger globules of atomised liquid are effectively retained so that only the finer spray is emitted. Having a flat base and being fitted with a rubber stopper, the Atomiser may conveniently be used as a container for the medicament. When filling the atomiser the level of the liquid should not be more than half way up the delivery tube. A dropper is provided for transferring medicaments to the Atomiser. The "Agla" Atomiser is of particular value for medication by the oral inhalation method in which case the patient directs the spray into the open mouth synchronising deep inhalations with sharp compressions of the bulb. This method is being increasingly employed in the symptomatic treatment of mild or moderately severe asthma, the medicament used being solution of adrenaline, 1 : 100. The Agla Atomiser may also be used with advantage for general medication of the nose, throat and upper respiratory passages.

In view of the present Emergency the United Services Section of the Royal Society of Medicine will not meet in October and the Address which was to have been delivered by the President, Surgeon Captain J. G. Dawson, R.N., is indefinitely postponed.

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[illegible] ORIGINAL CONTRIBUTIONS —
- [illegible] R. C[illegible], Surgeon Commander, R.N.V.R. [illegible]
- [illegible] Hamilton, F.R.C.S.Eng. [illegible]
- [illegible] R. H., Lieutenant Commander (Retd.) [illegible]
- [illegible] Guy, M.B. [illegible]
- [illegible] D. [illegible], Surgeon Lieutenant Commander [illegible]
- [illegible] M.R.C.S., L.R.C.P. [illegible]
- [illegible] H. [illegible], D.M.Oxon. [illegible]
- [illegible] J. [illegible], Surgeon Captain [illegible]
- [illegible], Surgeon Commander [illegible]
- [illegible] David, Surgeon Commander [illegible]
- [illegible], Surgeon Lieutenant [illegible]
- [illegible] C. H. M., Surgeon Commander [illegible]
- [illegible] J., Surgeon Lieutenant Commander [illegible]
- [illegible], Surgeon Lieutenant (D) [illegible]
- [illegible], M.B., D.P.H. [illegible]
- [illegible], Surgeon Lieutenant Commander [illegible]
- [illegible] D., Surgeon Commander, R.N.V.R. [illegible]
- [illegible], Surgeon Lieutenant Commander [illegible]
- [illegible] H. de B., Surgeon Lieutenant Commander [illegible]
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Slater J C Surgeon Lieutenant Comdr
Thomas A R [illegible] Surgeon L [illegible] R N V R
Vaughan Jones, R J Surgeon Lieutenant
Welsh D F Surgeon Lieutenant [illegible]
Whittingham H E Accountant Officer R A F

Notice

THE Editor invites Medical Officers to send in Original Articles on professional subjects travel personal experiences &c Items of news and matters of interest to the Naval Medical Service will be welcomed from ships and establishments on home and foreign stations

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